COLLEGE & RESEARCH LIBRARIES

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Guest editorial

Image Counts

Over the past year I have spoken to academic librarians around the country about the need to recruit talented people to our profession, especially those from diverse backgrounds and those who have strong training in the sciences. Helping funnel bright individuals into library school programs is only part of the task, however. Recruiting also requires a more universal effort, persuading others of the variety in our field and of the unique services we provide. I am concerned that we are often so busy just doing our jobs that we don't make a clear impression on those around us.

Ask yourself these questions: Do people with whom you interact as a professional ever encounter you in other contexts and roles? And conversely, do people whom you meet in civic, religious, or social settings realize what you know and what you really do as a professional?

I am afraid that most of us would answer no to both questions, and that worries me. Librarianship has a chronically low profile among the information and education professions because people do not understand the depth and breadth of our expertise or the extent of our responsibilities. Fortunately, each of us is in a position to help correct this problem with a little planning and a bit of moxie. For instance, we can schedule a lunch date every few weeks with someone we know on campus or in the community who is not in our normal library circles. We can volunteer to speak to local groups about the role of information in society (which will really focus on the capabilities of academic librarians and, hence, of academic libraries). We can take part in high school and college career fairs as panelists and advisers. We can build relationships with reporters who cover campus events and offer to help with feature stories about what goes on behind the scenes in an academic or research library. We can even join electronic bulletin boards on topics that interest us but are not library-related. Then, when we contribute to online discussions, we can mention that our professional training helped us locate such and such information in a particular place.

I have found that pointing out the common interest in information is often the best way to communicate with any audience, whether the group includes other highly trained professionals or citizens from diverse backgrounds. Because everyone today needs information to function well in society, I have discovered that highlighting our specialty as information connectors captures people's attention. It does not always seem obvious to others that librarians are often the best source for information of all kinds.

I know that many librarians hesitate to call attention to themselves, but that is not what I am suggesting. I am urging that we consciously and frequently call attention to our profession—especially when dealing with people who think that every library employee is a librarian and that no graduate work is required to enter the field. Keep in mind that we must be able to describe what we do in plain language without using jargon and acronyms.

Ultimately the best way to market ourselves is to be ourselves. We do offer a variety of unique services that are useful to the rest of society.

ANNE K. BEAUBIEN
ACRL President

The Emergence of the Paraprofessional in Academic Libraries: Perceptions and Realities

Larry R. Oberg

Several forces have contributed to a broad redistribution of tasks within the library workplace. Today, support staff accomplish much of the day-to-day work of the library and are routinely assigned tasks that a generation ago characterized the work of librarians. This redistribution of the library work load has created a new and unique class of library worker, the paraprofessional. It has also resulted in a significant overlap in the tasks performed by the two groups, for librarians have been curiously reluctant to give up many traditional aspects of their work that today can be performed satisfactorily by paraprofessionals. Task overlap has caused the role blurring that, in turn, creates resentment in the workplace and confuses our clientele who may not distinguish clearly between the two groups. The author cites data from his as yet unpublished national survey of the role, status, and working conditions of paraprofessionals. He concludes that a new model of librarianship is needed to define less ambiguously the role of paraprofessionals and librarians alike.

Although support staff constitute the majority of all library workers, interest in them on the part of librarians has never been profound or sustained. This is curious because the post–World War II period has been characterized by the increasing utilization of support staff. Specifically, the past twenty or more years have witnessed far-reaching changes in the division of duties between the two groups. As academic librarians busied themselves with their newfound faculty status requirements of teaching, research, and governance, they became more and more dependent upon support staff. Librarians pressed support staff into service in new areas and assigned them tasks they no longer had the time to perform or had come to consider routine. As a result, many support staff, although certainly not all, are now regularly assigned duties that once characterized the work of librarians.

In addition to the new responsibilities faculty status has required of librarians, other forces have contributed to the rise or fall of many tasks within the library work hierarchy, for example,

- the increasing complexity of the tasks associated with the automation of library processes;[1]
- networking;[2]
- the shortage of qualified librarians and other problems related to their recruitment and retention;[3]
- declining or static budgets that require a higher level of efficiency in order to control costs;
- the direct substitution of support staff

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for librarians as a cost-saving measure; and
- an increasing emphasis on public service, and their evaluation.

The creation of new tasks and the redistribution of old ones have significantly upgraded the level of work performed by both support staff and librarians.[4] Out of this process, a new class of library worker, the paraprofessional, has emerged. Paraprofessionals occupy the middle stratum of a three-tiered hierarchical staffing structure. Within this model, paraprofessionals are ranked below librarians, but above clerical employees.

The creation of new tasks and the redistribution of old ones have significantly upgraded the level of work performed by both support staff and librarians.

The phenomenon of paraprofessionalism is not without its parallels in other professions, for example, law and medicine, where the increased complexity of the fields has dictated the delegation of many complex tasks to support staff members.[5] Today, the legitimacy of the library paraprofessional classification is generally recognized. However, the tasks assigned to these positions, the preparation required of the incumbents, and the reward structures vary widely.

THE CHANGING LIBRARY WORKPLACE

Paraprofessionals have liberated librarians from the need to perform any but their highest-level tasks. Librarians, however, have remained curiously reluctant to give up many aspects of library work that no longer need be performed by them, either failing to grasp the potential of paraprofessionals or perceiving them as a threat to their own positions.[6] Consequently, the dramatic redistribution of the library work load has resulted in a wide zone of overlap in the tasks performed by the two groups. Task overlap characterizes today's workplace and blurs the distinctions between librarians and paraprofessionals. Role blurring angers paraprofessionals, who see themselves as doing what librarians do, but often for less money and always for less prestige.

In all fields, of course, professionals occasionally perform work characteristic of paraprofessionals just as paraprofessionals occasionally perform work characteristic of professionals. The problem lies in the degree to which this overlap in duties occurs and the precision with which the work of each group is defined. John Levett notes that some task overlap in libraries is to be expected. However, the width of the zone of overlap should concern us, he cautions, for herein lie "the seeds of conflict and issues of demarcation." The width of this zone, Levett continues, is determined by the relative maturity of the profession as measured in terms of social recognition and concessions granted. Levett concludes that one finds a wider zone of overlap in librarianship and social work than one does in medicine or architecture.[7]

Today, few areas of library work are off limits to paraprofessionals, and they perform most of our traditional organizational and archival tasks. Paraprofessionals perform original as well as copy cataloging, search remote online databases, administer major functional areas within libraries and are regularly assigned to work at reference and information desks.[8]

For the most part, these are tasks that only a few years ago librarians would not have permitted support staff to perform. In many libraries, particularly those in the larger publicly supported institutions, task overlap has been deliberately structured into the career ladders that order the responsibilities and the compensation of the two groups. In these libraries, higher-ranked paraprofessionals may be better rewarded than lower-ranked librarians.[9] In all libraries, however, task overlap, and the role blurring it creates, not only angers paraprofessionals but also confuses our clientele, who perceive librarians and paraprofessionals to be doing the same thing. This perception, whether true or false, is not a desirable one and can erode the quality of contacts between the library and its clientele. Larry R. Oberg, Mary Kay Schleiter, and Michael Van Houten argue, for example, that "librarians will need to communicate a clearer image of who they are and what it is they do. Otherwise, they perpetuate their isolation from institutional decision-making councils, ensure the continued underutilization of their abilities and knowledge, impoverish both client-librarian and client-collection contacts, and hinder their own efforts to become more involved in undergraduate education."[10]

PERCEPTIONS AND REALITIES

In an environment where role blurring abounds, it is not surprising that tensions have developed between librarians and support staff. Allen B. Veaner states that in his experience, "the bitterest resentments and the greatest potential for explosive divisiveness are centered in this difficult personnel area."[11] The organizational and administrative gulf that separates the two groups exacerbates the situation. The stage was set for conflict by 1971, when the Association of College and Research Libraries adopted the *Standards for Faculty Status for College and University Librarians*.[12] The *Standards* document gave renewed impetus to the efforts of academic librarians to upgrade themselves. It also mandated self-determination and "the maximum possible latitude" in fulfilling their responsibilities.

Faculty status and, since the 1960s, a generalized movement away from the earlier authoritarian-based administrative models have given librarians more control over the content and organization of their work. With the adoption of the *Standards*, a flexible work schedule became both a necessity and a reality for academic librarians who were now required to teach, conduct research, publish, and participate in college and university governance. The *Standards* also mandated an academic form of governance for librarians, and they promptly organized themselves in a collegial manner parallel to that of their newfound teaching faculty colleagues. This more democratic organizational model was then superimposed upon the library, a prototypical bureaucratic organization.

Of course, the bureaucratic format, with its compulsory forty-hour week, continues to dictate the schedules and organize the work lives of the support staff. Because the privileges of the collegial model were not extended beyond the professional ranks, two very dissimilar forms of governance came to coexist, often in uneasy juxtaposition, within most academic libraries. Veaner notes that although this bifurcate model grew out of "the structure of higher education itself," it nonetheless "impairs organizational unity and fosters adversarial relationships."[13]

The animosity Veaner and others find in the library setting does not have an exact parallel in academic departments. Here, collegial governance appears to be a more comfortable fit, no doubt because members of the teaching faculty outnumber departmental secretaries who, in any case, are rarely in competition with them.[14]

Anecdotal evidence indicates that librarians and paraprofessionals often misunderstand each others' roles. In many libraries, the new duties assumed by librarians and the reasons why they require collegial organizational models and flexible work schedules were never adequately explained to support staff. The seeming inability of librarians to state more precisely what it is that they do has contributed to the role blurring and resentment that exist today.

Often, paraprofessionals appear not to comprehend the scope of the responsibilities that librarians are expected to assume and perceive themselves to be doing equivalent work. Librarians may misconstrue the resentment that the support staff feel, treat them patronizingly, and even doubt the extent of their commitment to the library. Such attitudes on the part of librarians are, of course, counterproductive and become self-fulfilling prophesies that insure low self-esteem in paraprofessionals and prevent them from demonstrating a higher level of institutional and professional commitment.

The approach taken by librarians to these problems has been shortsighted, and we have failed to exercise leadership in this important area. Despite the real structural differences that exist, many librarians tend to ignore or minimize the distinctions between the two groups. This understandable desire to be democratic and not elitist is in conflict, however, with our traditional demand for two fundamentally different types of library workers—those who at least until recently were assigned only routine process-oriented work, and those who are responsible for the planning, decision making, and other programmatic aspects of the library. Failure to deal explicitly with the stratification that is inherent, not only in academic libraries, but also in the academy generally, results from our traditional unwillingness to come to terms with the problems of personnel utilization and contributes to the role blurring that characterizes our libraries today.

THE LITERATURE

Until quite recently, the literature that describes and analyzes the role, status, and working conditions of paraprofessionals within librarianship could at best be described as thin. With few exceptions, we have skirted these troublesome personnel issues. At the national level, authors have focused upon the more peripheral concerns of training and outcomes of support staff utilization in nontraditional roles, for example, at the reference desk or performing complex cataloging tasks. This particular literature betrays a remarkable degree of apprehension on the part of librarians about the advisability of assigning to paraprofessionals tasks that were previously performed by professionals. At the state and regional levels, the literature has been anecdotal, often condescending, and has added little to our understanding of the problems that beset paraprofessionals. A few exceptions, however, dot this rather bleak landscape.

In 1923, Charles C. Williamson urged the differentiation of professional from clerical tasks in his Carnegie Corporation–sponsored report, *Training for Library Service*.[15] Although most of the Williamson report addressed the specifics of curriculum reform, the author strongly recommended that library work be performed by two different classes of employees, professional and clerical, and that each group be supported by its own distinct training program. In his history of library technician training programs in the United States and Canada, Charles Holborn Held notes with some irony that Williamson's educational solution had to wait forty-six years to be endorsed by the American Library Association.[16] Despite the associational sanction it finally received, the concept has not found widespread acceptance at the grass-roots level.[17]

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Orvin Lee Shiflett, in his highly readable 1981 monograph *Origins of American Academic Librarianship*, defines the basic forces and events that have shaped academic librarianship.[18] Library training in the pre-Williamson era, generally referred to as the Dewey to Williamson period, has been described by Sarah K. Vann in her monograph, *Training for Librarianship before 1923*.[19] In 1979, Charles W. Evans traced the history of support staff and the evolution of paraprofessionals in a review article entitled "Evolution of Paraprofessional Library Employees."[20]

A brief review of library support staff history, "In the Beginning, There Was Support Staff . . . ," by Edward B. Martinez, appeared in 1989 in the first issue of the support staff journal *Library Mosaics*.[21] The development of library paraprofessionals as a class has been sketched by Charlotte Mugnier in her 1980 monograph, *The Paraprofessional and the Professional Job Structure*.[22] Mugnier notes a growing acceptance of the concept of paraprofessionalism within most service professions. Within librarianship, she suggests, acceptance is implicit in the promulgation of the American Library Association's 1970 policy statement, *Library Education and Personnel Utilization* (LEPU).[23]

Among those rare librarians who have looked squarely at the problems of paraprofessionals is Richard M. Dougherty, who as early as 1977 pointed to "a growing rift in the relations between professionals and other library staff." A University of California, Berkeley veteran of the social upheaval of the early 1970s, Dougherty warned that library assistants were becoming increasingly dissatisfied with their status as they assumed tasks relinquished by librarians. These higher-level responsibilities, he remarked, "too often have not been accompanied by commensurate rewards."[24]

In the early 1980s, Veaner traced a history of rapid change in academic libraries over the prior two decades. The role confusion that emerged during this tumultuous period, he notes, gave rise to the widespread "perception that two categories of employees are performing widely overlapping functions, seemingly at the same level, but in different employee series with different pay scales and different [perquisites]." Many librarians, Veaner notes, have contributed to this perception by failing to recognize "that changing times have drained away the professional challenge that once inhered in certain tasks."[25]

At least two empirical studies support Dougherty and Veaner's somewhat pessimistic assessments. Although job satisfaction surveys have been relatively common in the library literature, only a few have included support staff. In 1983, Beverly P. Lynch and Jo Ann Verdin reported data they had collected in 1971–1972 in three university libraries. They found "significant differences [in the levels of satisfaction] between the occupational groups," with "the professional librarians reporting higher satisfaction than the other members of the staff."[26] In a 1987 replication of their study, the authors concluded that these differences have held steady over time, and that "the professional group continues to report higher [levels of] job satisfaction than other staff members."[27]

More recently, Patricia A. Kreitz and Annegret Ogden surveyed job responsibilities and job satisfaction among professionals and support staff at the nine-campus University of California system. In response to their question, "In general how satisfied are you with your present job?" the authors found that 76 percent of the librarians checked the two highest categories on a 5-point scale, while only 50 percent of the library assistants did. Kreitz and Ogden also found significant blurring of the roles of librarians and library assistants and reported "a major overlap of responsibilities in the area of creating bibliographic access, small but provocative overlaps in the areas of collection development and public services, and a strong division of responsibilities in management-related activities."[28]

NEW INITIATIVES

Fortunately, librarians' general lack of attention to paraprofessional concerns has begun to change. There has been a small but perceptible increase in the number of research-based articles to appear in the literature. *Library Mosaics*, a new journal devoted exclusively to support staff issues, began publishing in 1989; in 1990, a highly successful national conference for support staff entitled Working in Libraries was held by the continuing education division of the School of Library and Information Studies at the University of Wisconsin, Madison, and then repeated because of high demand. In recent years, significant growth has occurred in the number, strength, and activities of paraprofessional sections within state and regional library associations; and at least two major projects intended to review support staff concerns have been initiated at the national level.

In 1990, the American Library Association's Standing Committee on Library Education (SCOLE) and the Office for Library Personnel Resources' (OLPR) Advisory Committee received a World

Book–ALA Goal Award to complete a one-year project on the condition of support staff. Project leaders presented a preconference program on paraprofessionals at the 1991 Annual Conference of the American Library Association, conducted focus group interviews with support staff and librarians, and plan to publish a collection of commissioned articles on library support staff issues.[29]

Appointed in 1988, the Association of College and Research Libraries' Task Force on Paraprofessionals was charged with reviewing the academic preparation of paraprofessionals, examining the career paths available to them, and recommending an appropriate role for them within the ACRL. In December 1990, the task force, chaired by Sheila Creth of the University of Iowa, submitted its final report in which it recommended increased participation of paraprofessionals within the association.[30]

In her final recommendation as executive director of the Association of College and Research Libraries, JoAn Segal proposed that the ACRL add a new category of membership to accommodate paraprofessionals. A special membership category, Segal notes, "would strengthen relations in the workplace, serve as a recruitment tool for entry into the professional ranks, and indicate our willingness to provide educational and other activities for an important segment of the academic library work force."[31]

Since its inception in 1967, the Council on Library/Media Technicians (COLT) has sought to improve the working conditions and defend the interests of library support staff. An American Library Association–affiliated membership organization, COLT provides a forum for the discussion of support staff issues and the promotion of support staff goals. COLT's annual conference is held in conjunction with the ALA's summer conference.

WHAT'S IN A NAME?

Paraprofessional position and employment series titles have proliferated at the local level. Standardization has not occurred and terminology varies widely in usage and meaning. My and Mark E. Mentges' as yet unpublished 1990 national survey of the role, status, and working conditions of paraprofessionals confirms the widespread impression that there is significant concern about, but little agreement on, nomenclature. The responses of the library directors surveyed make it clear that the term *paraprofessional* is a highly charged one. A number of these directors responded that they simply do not like it. Others reported that it is considered demeaning by some staff who prefer such terms as *support professional* or even *librarian*. Still others noted that they employ only clerical workers, none of whom they felt qualify as paraprofessionals by the definition provided.

My survey definition of paraprofessionals suggested that these positions have entrance-level requirements that are distinctly different from those of librarians, that incumbents are assigned high-level support responsibilities, and that they commonly perform their duties with some supervision by a librarian.[32] This slight attempt at definition, however, is not adequate to allow us to distinguish with confidence between paraprofessionals and clerical employees or between paraprofessionals and nonlibrarian professionals. Indeed, the lines that separate paraprofessionals from these other categories are as indistinct as those that separate them from librarians.

Associational definitions of paraprofessionals, those of the American Library Association and the American National Standards Institute (ANSI), for example, are weak at best and stand in need of revision.[33] At the local level, titles, such as *acquisitions clerk* and *reference assistant*, may not accurately reflect the scope of the responsibilities that these positions demand and risk offending the incumbents.

Anecdotal evidence suggests that some paraprofessionals and even a few librarians tend to deny the existence of clerical positions and consider all full-time support staff to be paraprofessionals. In some libraries, this perception results from a failure to distinguish between the capabilities of exceptional individuals and objective job requirements. In others, it accurately reflects the informal patterns of use made of these support staff. In small libraries, where support staff may be called upon to perform a wide range of duties, the lines of demarcation frequently tend to blur.

In all cases, however, paraprofessionals are a subset of the broader universe of support staff. The term is misleading when, as is often the case, it is applied without distinction to all classifications of library employees who are not librarians. Secretaries, typists, bookkeepers, and others whose jobs require only clerical or office-related skills are not paraprofessionals. Student library employees; van drivers; mailroom workers; audiovisual technicians; or nonlibrarian professionals, for example, library business and personnel officers, accountants, archivists, systems analysts, and programmers, do not fit the current definitions of paraprofessional either. Many of the new tasks that automation is creating in libraries, for example, data input and the management of CD-ROM services and microcomputer laboratories, remain to be classified within the work hierarchy.

THE CONDITION OF PARAPROFESSIONALS

Despite the profound nature of the changes that have occurred in the library workplace, librarians have not thoroughly analyzed the impact of these changes upon the individuals affected or upon the profession itself. In fact, it is fair to say that the profession has yet to come to grips with the emergence of paraprofessionals as a distinct class of library worker. The accelerating movement toward the use of support staff to perform complex library tasks has come about at the grass-roots level, to a large extent unaffected by the few national policy statements that define support staff activities and educational qualifications.

Many problems related to paraprofessional qualifications, utilization, classification, continuing education, and even nomenclature remain to be resolved. The *Library Education and Personnel Utilization* document, the most recent ALA Council–approved policy statement on library staffing patterns, formal educational requirements, and continuing education dates from 1970, although it is now under revision. In addition to defining professional positions, LEPU currently recommends three categories of support staff: library associates, library technical assistants, and clerks. The document delineates the training, educational requirements, and some duties appropriate to each level. Although the term is not used in the document, LEPU nonetheless anticipates and codifies library paraprofessionalism. LEPU was a breakthrough document for its time, but the model employment categories and the prerequisites that it proposes have not been widely accepted or implemented.

The only other American Library Association Council–approved policy statement that addresses the education of paraprofessionals is the *Criteria for Programs to Prepare Library/Media Technical Assistants* document. Published in 1969 and revised in 1979, the Criteria document establishes curricular standards for two-year educational programs for paraprofessionals.[34] In the field, however, the educational qualifications that are required of paraprofessionals vary widely from institution to institution and reveal a signal lack of standardization. Ad hoc standards are set in the workplace and equivalent tasks are performed by incumbents with widely varying backgrounds.

My survey reveals that 98 percent of all academic libraries in the United States require a high school degree of some or all of the paraprofessionals in their employ; 62 percent, an associate degree (a figure that rises to 78 percent at the two-year schools that traditionally grant them); and 64 percent, a bachelor's degree. Nine percent of all responding libraries require a graduate degree of some, but not all, paraprofessionals. Still, most of these libraries get more than they ask for: 65 percent report employing one or more paraprofessionals who hold a degree higher than that required for their jobs.

The recent spate of interest in paraprofessionals and, by extension, support staff generally, has not yet translated into significant improvements in their condition. Despite the shift of many high-level tasks to paraprofessionals, they may not be receiving the training, support, and compensation they need to get the job done. For example, 90 percent of my respondents offer paraprofessionals released time to attend local and regional conferences and workshops, but only 32 percent extend this incentive for attendance at national meetings. Eighty-one percent of the responding libraries offer financial support for attendance at local and regional meetings, but that figure drops to 24 percent for attendance at national meetings. Rush G. Miller points out that "one of the greatest impediments to support staff development is the lack of funding for travel." Funding, he insists, is vital for the success of any staff development program.[35]

Compensation for paraprofessionals varies greatly by type of library and geographical location. In many libraries, adequate compensation is inhibited by inappropriate salary comparisons that continue to be made between increasingly complex paraprofessional positions and totally unrelated jobs in physical plant, food services, business offices, and academic departments.[36] These traditional linkages are no longer useful and can severely depress paraprofessional salaries and status. It appears that librarians have not done a good job of making campus administrators and personnel officers aware of the magnitude of the changes in the job descriptions of library support staff.

My survey indicates that only 45 percent of the academic libraries in the United States provide paraprofessionals with a ranked classification system, or career ladder, that ensures the possibility of position reclassification. This figure rises to 87 percent at the large Association of Research Libraries institutions, but drops to 23 percent in the smaller liberal arts college libraries.

In summary, the educational requirements for paraprofessionals vary widely from institution to institution and often bear little resemblance to the LEPU standards. Staff development programs and continuing education opportunities are spotty and funding is inadequate. Our seeming inability to distinguish between the capabilities of individuals and objective position requirements confuses the issue. The problems of role definition and nomenclature are national in scope and result from the lack of a consensus on who paraprofessionals are and what it is that they should be doing. Our inability to define these groups more precisely hinders our research by rendering the statistics that we generate less than fully comparable. Perhaps most importantly, librarians have simply failed to demonstrate vision or exercise leadership in these areas.

Librarians have not done a good job of making campus administrators and personnel officers aware of the magnitude of the changes in the job descriptions of library support staff.

The following section contains some suggestions for dealing with these problems, but it is not an exhaustive attempt to resolve all of them. It is offered only as a catalyst to discussion.

WHAT NEEDS TO BE DONE?

Some of the apprehension librarians used to feel about the emergence of paraprofessionals has dissipated, and today we are less likely to perceive them as a threat. Most librarians understand that in an environment characterized by rapid change, it is the continued performance of the more routine tasks, not their delegation to support staff, that depresses the status of professionals.

Michael Gorman reminds us that "the number of tasks deemed to be professional should not exceed the number of tasks which need to be performed by professionals." As a rule of thumb, Gorman suggests, "no professional should do a task which can be performed by a paraprofessional, no paraprofessional should do a task which can be performed by a clerical staff member, [and] no human being should do a task which can be performed by a machine."[37]

Still, librarians have not achieved a clean fit between the paraprofessional and professional groups that proliferate within the library workplace. Gorman warns that "we have to reach a point at which we can affirm the value of professionalism and the value of contributions made by paraprofessionals and clerical staff without confusing their respective roles."[38]

Herbert S. White has proposed a model for the integration of librarians and nonlibrarian professionals. In White's model, the librarians remain firmly in control of the library and information processes, but coexist with the other professionals to whom they accord equivalent rights and the compensation professionals expect and deserve. "The point," White states, "has always been that there could easily be other professional skills represented in large and complex organizations."[39] Because the nature of paraprofessional positions has changed as incumbents have assumed increasingly complex tasks, White's model could be expanded to include these new tasks.

In the final analysis, what do paraprofessionals want? Most likely, I think, respect, trust, collegiality, just compensation, and a future—in short, a career, and not just a job. As librarians, we should grant them that. A library sustains an enormous waste of potential and talent when paraprofessionals are kept down, undertrained, and denied responsibility and respect. In my opinion, the time is long past due for librarians to accept paraprofessionals as colleagues in more than name only.

Paraprofessionals should receive the systematic training, staff development, and continuing education opportunities that are needed to ensure the conditions required for their success. The educational prerequisites these jobs demand must be reviewed closely, and realistic enforceable standards established. Most difficult of all, funding for attendance at state, regional, and even national meetings will need to be found and incumbents encouraged to attend. Mark E. Mentges notes that "if the recent interest expressed by paraprofessionals in letters to national magazines such as *Library Journal* and *American Libraries* are [is] any indication, large numbers are now thinking and acting on a national level."[40] At the national level, librarians must place a high priority upon paraprofessional concerns in their strategic planning councils and on their national research agendas.

Of course, paraprofessionals and librarians alike should assume increased responsibility for upgrading their own qualifications. The challenge for librarians, who are often perceived by paraprofessionals to be doing less than professional-level work, is to give up their attachment to the lower-level tasks that they in fact need perform only occasionally and redefine their positions in terms of their most complex and challenging professional responsibilities.[41]

What do paraprofessionals want? Most likely, I think, respect, trust, collegiality, just compensation, and a future—in short, a career, and not just a job.

In a discussion of the qualifications required of catalogers, Sheila S. Intner challenges librarians "to [wake] up to the fact that they trivialize their field if they are satisfied doing jobs that should belong to well trained paraprofessionals." Were we to insist that these tasks be performed by properly trained paraprofessionals, she notes, librarians would "free [themselves] to do more challenging, interesting, and important work."[42] Because certification does not exist in librarianship, librarians who persist in performing tasks that can be performed satisfactorily by less highly qualified staff are protected as they create role confusion for our clientele and embarrassment to the profession.

The challenge for paraprofessionals is to cast their gaze beyond the internal procedures that have traditionally preoccupied them and make the service role and mission of the library their primary point of reference. They should accept that not all support staff, not even all those who are doing library-specific tasks, qualify as paraprofessionals. Paraprofessionals also need to gain a clearer understanding of the librarians' role and the importance of their research, teaching, governance, planning, and administrative responsibilities. Finally, they must stop blaming librarians for their own ills. Miller suggests that this attitude "is no more likely to bridge the chasm between [the two groups] than is [the librarians'] insistence of superiority."[43] In sum, many ingrained habits of librarians and paraprofessionals alike must change.

The empowerment of paraprofessionals should not be perceived as a threat to professional positions. Many tasks, of course, continue to be driven downward in the work hierarchy by technology, networking, resource sharing, and the other changes that are altering the information environment. These same forces, however, drive yet other tasks upward and create exciting new opportunities for librarians and all information professionals.

In order to meet these challenges effectively, librarians must define their role less ambiguously. When they clarify their own ambivalent status, they will have gone a long way toward resolving the problems that cloud the role and status of the paraprofessional. Indeed, how can we as librarians expect to help paraprofessionals decide who they are if we cannot first decide who we are?

THE PROBLEM OF DEFINITION

Over one hundred years have passed since Dewey rather optimistically proclaimed us a profession,[44] yet we are still without an adequate definition of a librarian or a comprehensive model of librarianship. In 1933, Pierce Butler urged the scientific method upon the librarian, whom he found to be "strangely uninterested in the theoretical aspects of his profession," an isolated figure who "stands alone in the simplicity of his pragmatism."[45] In truth, librarians today remain as unsure of what librarianship is or ought to be as they were nearly sixty years ago when Butler implored them to look beyond process and toward function.

Almost twenty years after the ACRL adopted the *Standards for Faculty Status for Academic Librarians* document, faculty status as the desired condition of all academic librarians has yet to be accepted fully by the membership. A range of alternative status models proliferates on our campuses, and librarians (or, more likely, the administrators to whom they report) choose with impunity between faculty, academic, administrative, professional, and even librarian variants.[46]

Paraprofessionals should receive the systematic training, staff development, and continuing education opportunities that are needed to ensure the conditions required for their success.

For decades, librarians have attempted to sort the professional wheat from the paraprofessional chaff by compiling lists of the tasks that putatively define each category. In most respects, this has been a singularly unrewarding exercise. Its one great virtue, however, has been to demonstrate that librarianship is more than the sum of its parts. Still, a new theoretical model of the profession, a lens through which librarians can view, organize, and evaluate practice, has yet to emerge. When it does, however, this new model will surely see librarians concentrating more of their time upon the most professional aspects of their work and less upon the repetitive tasks. Almost certainly, it will see librarians accord paraprofessionals considerably greater responsibility for the day-to-day running of the library.

In 1982, Veaner challenged the profession to decide between two mutually exclusive concepts of librarianship, concepts he terms continuous and discontinuous.[47] Under the terms of his continuous model, no sharp breaks occur between the various levels of work or the categories of workers required to perform them. The tasks required of this model, no matter how difficult, complex, or challenging, may be learned by incumbents through apprenticeship, and the individual worker advances on a potentially unlimited continuum. If continuity characterizes librarianship, Veaner warns, we must accept that it is a craft and not a profession.

Veaner contends, however, that librarianship is in fact characterized by discontinuity. He maintains that two fundamentally different types of work exist, each requiring its own separate and distinct group of workers. One group functions in a support capacity and is characterized by the performance of process-oriented tasks, i.e., the craft work of libraries. The other group requires graduate-level training and is characterized by programmatic responsibilities and the abstract, intellectual nature of the work performed, i.e., the professional work of libraries.

In Veaner's discontinuous model, the librarian not only assumes responsibility for research, teaching, governance, collection development, bibliographic control, and direct patron aid, but also for planning, design, analysis, evaluation, problem solving, and administration. In brief, the librarian is responsible for creating the conditions that ensure the success of the library.

The time is at hand to decide between these two fundamentally opposed concepts of librarianship. If librarians continue to avoid endorsing one or the other, we cannot say that we have not been warned. Veaner tells us that "the problem of personnel utilization can be postulated as a fundamental question of librarianship" and, he cautions, "the answer may have profound implications for the status of librarians, for graduate education in library science, for the academic institution's budget, for collective bargaining, and potentially for class action litigation in the area of equal pay for equal work."[48]

The problem of role definition and articulation is at the heart of our predicament. The inability of librarians to define their own role less ambiguously inhibits us from describing paraprofessionals more precisely, from explaining ourselves to clients who fail increasingly to distinguish between the two groups, and from exercising leadership in this important arena. The emergence of the paraprofessional as an active, vital force in our libraries compounds librarians' age-old identity crisis and challenges us to resolve at last the problem of our status.

REFERENCES AND NOTES

1. The fact that "the productivity tools which automation has made possible have reduced the skill level required to do certain types of library work," is noted in "Changing Staffing Patterns in Academic Libraries," *Library Issues: Briefings for Faculty and Administrators* 7:2 (Sept. 1986).
2. Patricia Glass Schuman notes that "networking does tend to move tasks formerly considered professional downward—particularly in the areas of circulation, cataloging, acquisitions, and interlibrary loan." See Schuman, "Library Networks: A Means, Not an End," *Library Journal* 112:34 (Feb. 1, 1987). The fact that "the standardization which the national cataloging systems has made possible permits many libraries to use paraprofessional and clerical staff to handle work which formerly required the skills of a professional catalog librarian," is noted in "Changing Staffing Patterns," p.2.
3. Kathleen M. Heim, "Librarians for the New Millennium," in *Librarians for the New Millennium*, ed. William E. Moen and Kathleen M. Heim (Chicago: Office for Library Personnel Resources, American Library Association, 1988), p.1–10.
4. In a discussion of the "technological imperative," Allen B. Veaner suggests that the application of a technology drives very complex, but routine, mental work downward in the hierarchy of tasks. No longer essential to the performance of these tasks, professionals cease to be production workers. Their work then becomes abstract and predominately intellectual, comprehending new and challenging responsibilities. See Veaner, "Librarians: The Next Generation," *Library Journal* 109:624 (Apr. 1, 1984).
5. For a comparison of the status of library paraprofessionals with their counterparts in law and medicine, see Kathleen M. Heim and Debbie Wolcott, with the assistance of

Ed McCormack, "Staff Utilization in Libraries: The Historical and Environmental Context for Renewed Attention to Education, Role Definition, and Articulation with Special Consideration of Medicine and Law," *Louisiana Library Association Bulletin* 52:149–57 (Spring 1990). See also John Levett, "Paraprofessional Workers in Four Fields: A Comparative Study," *The Australian Library Journal* 30:47–54 (May 1981).

6. Ralph M. Edwards points out that "many people who are supposed to be functioning as librarians have always avoided professional responsibility by immersing themselves in routine clerical work. Uninformed management attitudes and techniques in libraries have frequently abetted this dereliction of professional function." See Ralph M. Edwards, "The Management of Libraries and the Professional Functions of Librarians," *Library Quarterly* 45:150 (Apr. 1975).
7. Levett, "Paraprofessional Workers in Four Fields," p.48.
8. In 1990, Mark E. Mentges (University of California, Berkeley) and I conducted an as yet unpublished survey of all ARL reference libraries and a random sample of almost 400 Carnegie classification libraries nationally. Of the responding Carnegie classification libraries, 61 percent regularly assign to paraprofessionals Library of Congress input copy cataloging and approximately 20 percent assign original cataloging, including description, subject analysis, and classification. Online database searching is regularly performed by paraprofessionals in 21 percent of these libraries; 46 percent assign substantial administrative responsibility to paraprofessionals in circulation, 30 percent in interlibrary loan, 33 percent in periodicals, 27 percent in acquisitions, and 22 percent in cataloging. Sixty-six percent of these libraries regularly schedule paraprofessionals to work at the reference/information desks.
9. Thirty percent of the library directors in all libraries responding to my survey report that they have at least some paraprofessionals in their employ who earn a salary comparable to or higher than entry-level librarians. This figure rises to 87 percent in large research institutions and declines to 14 percent in liberal arts colleges.
10. In a survey of Albion College faculty, Oberg, Schleiter, and Van Houten found that "77% [of their respondents] could not identify by name all five Albion College librarians although the campus community is quite small and the nature of professional employment clearly outlined on the questionnaire. Further, 40% identified as librarians one or more members of the support staff. These were most often staff with whom they have frequent contact—circulation, interlibrary loan, and periodicals department employees, for example." Larry R. Oberg, Mary Kay Schleiter, and Michael Van Houten, "Faculty Perceptions of Librarians at Albion College: Status, Role, Contribution, and Contacts," *College & Research Libraries* 50:225 (Mar. 1989). In a survey of the image of the librarian, Joan C. Durrance suggests that "the profession that fails to distinguish between librarians and other staff (who have not had the benefit of a professional education) is culpable for any opinions that the public may form about librarians' ability." Durrance, "Librarians: The Invisible Professionals," in *The Bowker Annual Library and Book Trade Almanac*, 35th ed., (New York: Bowker, 1990), p.96.
11. Allen B. Veaner, personal communication, Sept. 28, 1990.
12. Association of College and Research Libraries, Academic Status Committee, "Standards for Faculty Status for College and University Librarians," in *Academic Status: Statements and Resources* (Chicago: American Library Association, 1988), p.9–10.
13. Allen B. Veaner, *Academic Librarianship in a Transformational Age: Program, Politics, and Personnel* (Boston: Hall, 1990), p.439.
14. Miller notes that "Secretaries and faculty members may have conflicts, but the secretary would not dream of aspiring to be a faculty member, nor would the faculty see a rivalry in the relationship. In other words, their respective roles are clearly delineated and few inherent conflicts arise." Rush G. Miller, "Support Staffs in Academic Libraries: The Dilemma and the Challenge," *Journal of Educational Media and Library Sciences* 25:357 (1988).
15. The two Charles C. Williamson reports, the original unpublished manuscript and the published report, have been reissued as *Training for Library Work* (1921) and *Training for Library Service* (1923), (Metuchen, N.J.: Scarecrow, 1971), 2v.
16. Charles Holborn Held, *The Status of Library Technicians in the United States: A Dissertation* (Detroit: Wayne State University, Graduate Division, 1969). It was not until 1969 that

the American Library Association published its *Criteria for Programs to Prepare Library Technical Assistants: Statement of Policy*.
17. For a discussion of the postsecondary educational programs for library technicians, see Ian M. Johnson, "The Development of Library Technicians: A Review of Experience in Selected Countries," International Federation of Library Associations and Institutions (IFLA) General Conference, 1990, *Booklet 3*. (The Hague: IFLA, 1990; Bethesda, Md.: ERIC Document Reproduction Service, ED 329 284, 1991), p. 53–61.
18. Orvin Lee Shiflett, *Origins of American Academic Librarianship* (Norwood, N.J.: Ablex, 1982).
19. Sarah K. Vann, *Training for Librarianship before 1923* (Chicago: American Library Association, 1961).
20. Charles W. Evans, "The Evolution of Paraprofessional Library Employees" in *Advances in Librarianship* 99:64–97 (New York: Academic, 1979).
21. Edward B. Martinez, "In the Beginning, There Was Support Staff," *Library Mosaics* 1:6–8 (Sept./Oct. 1989).
22. Charlotte Mugnier, *The Paraprofessional and the Professional Job Structure* (Chicago: American Library Association, 1980).
23. American Library Association, *Library Education and Personnel Utilization: A Statement of Policy by the Council of the American Library Association*, June 30, 1970 (Chicago, 1976). The LEPU document, originally entitled *Library Education and Manpower*, was revised and edited in 1976 by the Office for Library Personnel Resources' (OLPR) Advisory Committee to remove sexist terminology.
24. Richard M. Dougherty, "Personnel Needs for Librarianship's Uncertain Future," in Herbert Poole, ed., *Academic Libraries by the Year 2000: Essays Honoring Jerrold Orne* (New York: Bowker, 1977), p.112.
25. Allen B. Veaner, "Continuity or Discontinuity—A Persistent Personnel Issue in Academic Librarianship," *Advances in Library Administration & Organization* 1:3 (1982). In the original published source, the author notes, the word *perquisites* was inadvertently transposed into *prerequisites*.
26. Beverly P. Lynch and Jo Ann Verdin, "Job Satisfaction in Libraries: Relationships of the Work Itself, Age, Sex, Occupational Group, Tenure, Supervisory Level, Career Commitment, and Library Department," *Library Quarterly* 53:442 (Oct. 1983).
27. Beverly P. Lynch and Jo Ann Verdin, "Job Satisfaction in Libraries: A Replication," *Library Quarterly* 57:199 (Apr. 1987).
28. Patricia A. Kreitz and Annegret Ogden, "Job Responsibilities and Job Satisfaction at the University of California Libraries," *College & Research Libraries* 51:307 (July 1990).
29. "Research and Action Agenda for Support Professionals in Libraries," *Application for World Book-ALA Goal Awards*, unpublished manuscript, 1990.
30. American Library Association, Public Information Office, *ACRL Task Force Recommends Increased Paraprofessional Participation* (Chicago: American Library Association, 1990).
31. Association of College and Research Libraries, *Academic Librarians: Partners in Higher Education: The 1989–90 Annual Report* (Chicago: American Library Association, 1990), p.9.
32. The definition of paraprofessionals that I wrote for my 1990 survey—based to a large extent upon ALA and IPEDS definitions—follows: "The term paraprofessional designates library positions with entrance-level requirements that are distinctly different from those of librarians. Paraprofessionals are assigned high-level support responsibilities in positions whose tasks are specific to libraries. They commonly perform their duties with some supervision by a librarian. The term is often applied to personnel classified as library assistants, associates, technicians, and technical assistants. Examples of paraprofessional position titles include: head of circulation, interlibrary loan assistant, acquisitions coordinator, catalog assistant, periodicals supervisor, reference assistant, etc. The following members of the support staff should not be included as paraprofessionals: secretaries, typists, bookkeepers, and others whose positions require primarily office-related skills; student library assistants, photographers, photocopy room and mailroom employees, audiovisual technicians, etc.; or professionals who may not hold a master's degree in librarianship, for example: systems analysts and other computer specialists, library business officers, library personnel officers, etc."

33. For a survey of definitions of paraprofessionals see "Support Staff by Any Other Name," *Library Mosaics* 1:10–12 (Sept./Oct. 1989).
34. *Criteria for Programs to Prepare Library/Media Technical Assistants* (Chicago: American Library Association, 1979). The revised statement was adopted by the American Library Association Council on June 2, 1979.
35. The other elements of staff development that Miller considers important are participation in decision making, orientation programs, workshops and other in-house programs, formal and not-so-formal courses, and job swapping. See Rush G. Miller, "A Model for Support Staff Development in Academic Libraries," unpublished paper, 1988, p.4–5. Miller is dean of libraries, Bowling Green State University, Bowling Green, Ohio 43403–0175.
36. In my survey, the percentage of Carnegie classification respondents that use certain comparison criteria in the determination of paraprofessional salaries is: other campus support staff salaries, 83 percent; equivalent salaries at other institutions, 41 percent; librarians' salaries at the same institution, 14 percent; other government employees' salaries, 22 percent; and salaries established through collective bargaining negotiations, 24 percent.
37. Michael Gorman, "The Organization of Academic Libraries in the Light of Automation," in *Advances in Library Automation and Networking*," 1:158 (1987).
38. Michael Gorman, "The Academic Library in the Year 2001: Dream or Nightmare or Something in Between?" *Journal of Academic Librarianship* 17:8 (Mar. 1991).
39. Herbert S. White, "Professional Librarians and Professionals in Libraries," *Library Journal* 116:74 (Jan. 1991).
40. Mark E. Mentges, "Library Paraprofessionals in Academic Libraries—Where to Now?" *Library Mosaics* 2:15 (Mar./Apr. 1991).
41. A paraprofessional colleague from California wrote me after reading a typescript version of this article: "Not to be too critical of your concept of high-level librarianship, but from my observations here at . . . and other libraries I have visited or have contacts at, I really feel that perhaps only 10–20% of the professionals are operating at the teaching and research level you envision. In looking at the overall picture, paraprofessionals might not be the group in doubt, but librarians may be the endangered species. The closing of Columbia's library school, and the real possibility of Berkeley's closing, send a chilling message. Certainly, to the campus administrations, library education seems to be expendable. Isn't this the fault of the profession for failing to be perceived as an integral part of scholarship? I am afraid the caretaker role too many librarians perform might be all too prevalent in academic settings . . . ."
42. Sheila S. Intner, "The Education of Copy Catalogers," *Technicalities* 11:6 (Mar. 1991).
43. Rush G. Miller, "Support Staff in Academic Libraries: The Dilemma and the Challenge," *Journal of Educational Media and Library Science* 25:364 (1988).
44. Melvil Dewey, "The Profession," *American Library Journal* 1:5 (Sept. 30, 1876). Dewey wrote that "the time has at last come when a librarian may, without assumption, speak of his occupation as a profession."
45. Pierce Butler, *An Introduction to Library Science* (Chicago: Univ. of Chicago Pr., 1933), pp.xi-xii.
46. An as yet unpublished national survey of the "status of academic status" conducted in 1990 by Charles B. Lowry, Larry R. Oberg, Irene B. Hoadley, and Rush G. Miller reveals that 67 percent of all academic libraries in the United States grant (some form of) faculty status to their librarians; 7 percent grant academic status; 24 percent grant professional/administrative status, and 2 percent impose civil service classifications.
47. Veaner, "Continuity or Discontinuity," p. 1–20.
48. Ibid., p.2.

Online Catalog Failure as Reflected through Interlibrary Loan Error Requests

Scott Seaman

Using data obtained through the interlibrary loan process, this study examines why some users failed to find existing entries in the online catalog at The Ohio State University. Approximately 9% (1,369) of the 1988–89 interlibrary loan borrowing requests were returned to the patron because library staff found the items in the local online catalog. These requests represent either a failure of the user to search the system correctly or a failure of the catalog to retrieve the required record. A sample of the borrowing requests was sorted into user errors and catalog errors. User errors represented 49% of the sample and exhibited five characteristics: no apparent error (43%); spelling errors (7%); incorrect author or title (40%); abbreviations (9%); stoplist words (1%). Catalog failures represented 51% of the sample and five categories of error were identified: punctuation (22%); analytics (16%); corporate word order (28%); truncation (10%); file too large (24%).

Library catalog use studies have a long history. As catalogs have moved from card format to online media, some of these studies have continued to focus on a consistent question: If a user has an accurate and complete author and title, why does a search of the catalog fail to retrieve the corresponding record?

This study examines why some users failed to find existing entries in the online catalog at The Ohio State University. However, rather than relying on the traditional methods of collecting data by interviews or observation of the catalog search process, this study relies on data obtained through the interlibrary loan process. The interlibrary loan process offers a unique perspective on catalog failure. Prior to requesting an item from another university, interlibrary loan staff routinely search the online catalog to confirm that the item is not held locally. Those items found to be locally owned comprise the data for this study.

Data collected through interlibrary loan offer several advantages. Each request unquestionably represents what the user believes to be a known-item search. Because the data have been collected indirectly, the well-documented problems of interviews, questionnaires, and online observation methods are avoided. Also, it is reasonable to assume that the patron has gone to some length to search the item locally, since the item was considered important enough to wait three to six weeks for the item's delivery. Further, because undergraduate students are not serviced by Ohio State's Interlibrary Loan Office, the data are assumed to be from a population tending

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to be experienced library users, i.e., faculty, graduate students, and university staff.

A substantial body of research discusses the interaction between the user and the card catalog.[1] In the tradition of this work, researchers have studied the performance of online catalogs. Primarily this research has focused on the searching of known items, not because known items are more important, but because the results can be more accurately measured.

Librarians generally agree that users have a high success rate searching the online catalog for known items. From questionnaires distributed to users of the Ohio State University Libraries' online catalog, Sammy R. Alzofon and Noelle Van Pulis found that 48% of the searches were for known items with an overall success rate of 81%.[2] At Ohio State, Mary Gouke and Susan Pease interviewed users to determine success or failure of known-item searches in the Libraries' online and card catalogs. They reported that patrons with more than one year's experience searching the online catalog had a 92% success rate when searching known items. The most important factor associated with success in the online catalog, they found, was the users' perception of the complexity of the title. That is, the more complicated the title appeared, the less successful the patron was in finding the existing catalog record. When Gouke and Pease analyzed the search failures, they found that titles appearing to be subject headings often caused users to perform the wrong search. Hyphenated words and stoplist words caused confusion over which words to search. Searches that produced too many matches, even though the correct record did appear, failed because the user did not thoroughly examine the search results. Also, searches performed using abbreviated titles failed because the correct record was not retrieved.[3]

Similarly, Renata Tagliacozzo, Lawrence Rosenberg, and Manfred Kochen interviewed users in four large libraries to analyze patterns of card catalog searching and success. Their findings indicated that users often had correct titles but, nevertheless, preferred to search by author although it was less likely the user had a correct author statement. They found that, depending upon the library, 7 to 20% of all searches failed to find a corresponding entry. Also, they found that less than 50% of users went beyond the first attempt to locate a known item and that only 4% of users went beyond a second.[4]

Jean Dickson analyzed Northwestern University's NOTIS transaction log to classify "zero-hit" searches. Dickson found that 26% of zero-hit author searches were entered with forenames first, preventing the user from finding a title in the database. Nearly 64% of zero-hit title searches were caused by incorrect spelling of the first or second word of the title or by the inclusion of an initial article.[5]

Traditionally, catalog failure studies have relied upon user questionnaires (Gouke and Pease, Alzofon and Van Pulis, Tagliacozzo et al.) or some form of unobtrusive observation (such as the transaction log analysis of Dickson) to compile data. But reliance on both methods of data collection have been questioned. Jerry Specht observed that transaction log data are inherently limited in their capacity to record successful searches and search failures.[6] James Krikelas, for example, asserts that relying upon observed behavior is not accurate and that many previous studies have inadvertently mixed known-item with what are truly subject searches. Like Gouke and Pease, Krikelas found that a user's search strategy is affected by the bibliographic information available and the user's perception of the complexity of that information. As the information about an item becomes complicated or less distinctive (such as with corporate authors or technical reports), there is a corresponding increase in users creating title or subject searches. Consequently, many users searching complex items resort to subject searches rather than to using the information at hand.[7] Similarly, Ben-Ami Lipetz demonstrated that users often employ a known-item search to locate a subject heading for browsing.[8]

THE ONLINE CATALOG

Ohio State University's Library Control System (LCS) became operational in 1970 as a circulation system and in 1975 as a public catalog. Currently 235 dedicated public access terminals are available throughout the university's library system serving a population of 55,000 students, 4,500 faculty, and 16,500 staff.

Of the 4.3 million volumes in Ohio State's collection, 2.9 million are cataloged on LCS. Of the 2.9 million titles, about 1.3 million have only brief location displays that include author, title, date of publication, holding library, and availability statement. The remaining 1.6 million titles include a full bibliographic record with full descriptive information. Although the card catalog is available, it has not been maintained since 1982. Analytics for items cataloged before 1983 are not yet represented other than by a search of the serial title. Access to added entries and subject headings is available for Ohio State titles added since 1974.

LCS is a command-driven system searchable by author, title, author/title combination, subject heading, call number, uniform title, and series title. It creates a search algorithm from the full title or author and title the user enters. LCS ignores initial and internal articles. Boolean combinations or keyword searching is not available. The increased searching power of Boolean or keyword searching could, in cases of incorrect or incomplete information, lead to increased retrieval on the part of skilled searchers.

HYPOTHESIS AND DESCRIPTION OF DATA

The hypothesis of this study is that certain characteristics of the online catalog, or its file structure, inhibit users from locating existing catalog records in the online database. Further, these characteristics are such that a user with complete and correct information will not, in some cases, locate the catalog record corresponding to a bibliographic search.

Data to test this hypothesis are available through the interlibrary loan process. During the 1988–89 academic year, 15,300 requests to borrow books and articles were submitted to the University Libraries' Interlibrary Loan Office. Each request was searched in the local online catalog to verify that the item was not available locally before ordering from another library. About 9% (1,369) were returned to the requestor because interlibrary loan staff found the item in the local online catalog. These requests represent failure of the user to search correctly the system or a failure of the catalog to retrieve the required record.

THE SAMPLE

The large number of requests (1,369) necessitated sampling for analysis. It was anticipated that the data would fall into two broad categories: user error and catalog error. The required sample size was determined by using a formula for estimating a population proportion (the formulas are available from the author upon request). It was found that to represent accurately the population, the sample size must be at least 226.

DEFINITIONS AND METHODOLOGY

Using a table of random numbers, we generated 226 numbers and arranged them sequentially. The 1,369 error cards from the 1988–89 academic year are maintained in a file arranged alphabetically by main entry. Starting at the beginning of the file, the card that matched the random number was pulled, photocopied, and replaced. Online catalog searches were performed on each of the 226 photocopied cards and the printouts attached to provide correct bibliographic information.

The sample was sorted into two categories: those cards exhibiting user errors and those exhibiting catalog errors. User errors were defined to be mistakes for which a catalog could not be expected to compensate, such as spelling errors or incorrect titles. Catalog errors were defined to be those instances when the user possessed and presumably entered the correct bibliographic data, but the catalog structure impeded the user in locating the matching online record. The objective in sorting by user and catalog error was to separate obvious spelling and citation errors from the failures that the catalog structure imposed.

The user error category comprises:

1. **No Apparent Error.** Correct and complete author and title given on the interlibrary loan request, but the user failed to find the online record.
2. **Spelling Errors.** Errors either in the author's name or in the 4,2,2,1 title characters used as the search algorithm. An example is citing *Maria Luisa* as *Maria Lisa* or citing *South West Review* instead of *Southwest Review* on the interlibrary loan card.
3. **Incorrect Author or Title.** Personal author or title-main entry citations for which the wrong author or incorrect title was provided. An example is citing *The Social Effects of Mental Illness* rather than the correct title, *The Social Consequences of Psychiatric Illness*.
4. **Abbreviations.** Citations for which the title was abbreviated such that it could not be accurately searched. An example is *S-Foodserv-J.* for *School Foodservice Journal*.
5. **Stoplist Words.** LCS, like most online catalogs, does not search frequently used words in the title or author/title search. Primarily these are initial articles such as: *a*, *an*, *from*, *ha-*, and *the*. The patron may omit the stoplist word or LCS will automatically read over the word.

After examining the data, five subcategories of catalog failure were identified:

1. **Punctuation.** In the title fields that affect the search algorithm. For the title, *Problem-Solving Processes of College Students*, *Problem-solving* must be searched as a single word in LCS.
2. **Analytics.** Series titles for which no analyzed entry exists in the online catalog. For example, Anna Rutledge's *Artist in the Life of Charleston* is volume 39 of the *Transactions of the American Philosophical Society*. Both titles are correct, but only the series title is accessible on Ohio State's online system for titles cataloged before 1983.
3. **Corporate Word Order.** Items produced by corporate bodies for which the author or title is not clear. For example, a request for *Proceedings of the International Conference on Robot Vision and Sensory Controls* consists of the author International Conference on Robot Vision and Sensory Controls and the title of *Proceedings*. Users often have difficulty distinguishing between the title and author and, consequently, fail to locate an item that is in the local catalog.
4. **Truncation.** Ohio State's online catalog allows for truncation of title entries by adding a hyphen to the end of a search. However, if the user fails to insert the hyphen after keying fewer than four words of the title, the online system will fail to retrieve the record. For example, a title search for *The Proud Heritage* will fail to retrieve *The Proud Heritage of Cleveland Heights, Ohio*.
5. **File Too Large.** Searches for which a large number of matches are retrieved interfering with locating the correct record. For the purposes of this study, it was assumed that whenever the search resulted in more than six screens of matches (approximately 50 titles), the file was too large for the user to interpret adequately. Examples are *Science*, *Scientific American*, and *Acustica*.

RESULTS

It was determined that of the sample of 226 requests, 110 were user failures (49%). Catalog failure accounted for 116 requests (51%). Confidence limits were established for user and catalog failure. It was found with 95% confidence that the true proportion of user failures lies between 43% and 55%. Similarly, one is 95% confident that the true proportion of catalog failures lies between 45% and 57%.

User Error

Figure 1 details the categories of user error. The largest, at 43%, were those requests with no apparent error. On

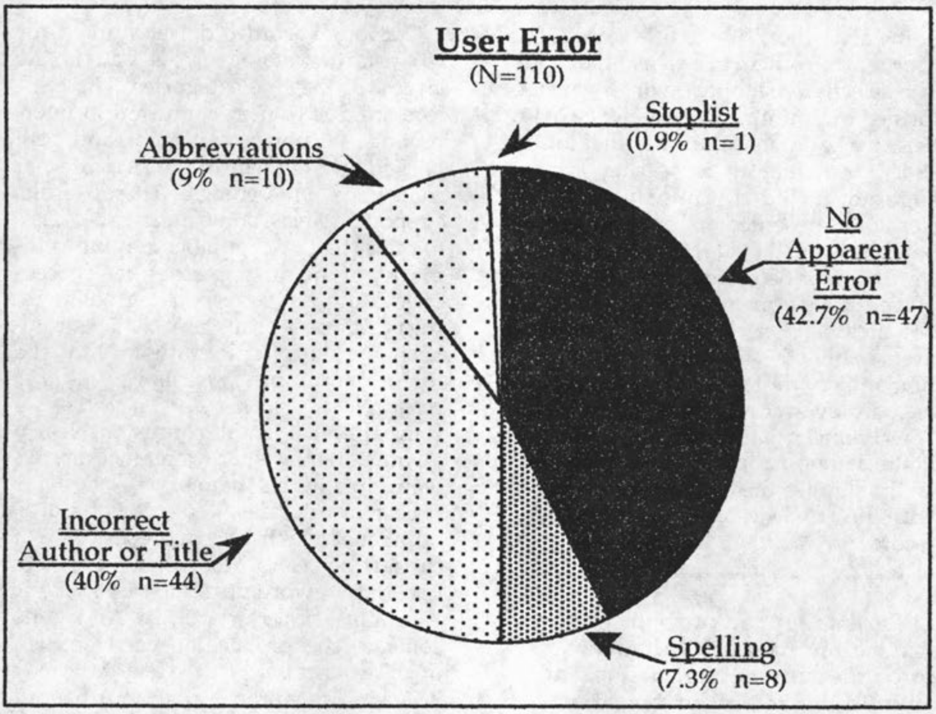

FIGURE 1
User Error by Subcategory

those requests, the author and title were correct and complete. Each request was found in the local database using either the author, title, or author/title search with the information provided on the request card. That this statistic is so high may reflect Tagliacozzo, Rosenberg, and Kochen's findings that only 50% of users go beyond the first search when attempting to locate an item.

The hypothesis of this study is that certain characteristics of the online catalog, or its file structure, inhibit users from locating existing catalog records in the online database.

Requests having incorrect authors or titles represented 40% of the user errors. The user, most likely, brought to the online catalog an incorrect citation. For example, one user gave the title *Local Political Opposition in Japan* for a monograph titled *Political Opposition and Local Politics in Japan*. Often these errors were identified during the OCLC or RLIN searching process. They were then searched again with the correct information in the local catalog. While many of these failures are presumably due to faulty memory on the part of the user, the influence of prepublication information may have some influence on these data.

The other three categories—abbreviations, stoplist words used in the search, and spelling errors—account for only 17% of the user errors. That these categories are so low probably reflects the nature of the data. Presumably, by the time the user requests an item through interlibrary loan, he or she has searched the citation multiple times to minimize such errors.

Only one stoplist error was found among the data, suggesting the construction of the stoplist is adequate. LCS automatically omits stoplist words when doing an author/title or title search. The user may put them in or leave them out. The selection of stoplist words was performed by counting the frequency of articles in the database. To keep the stoplist short, infrequently appearing articles were not included. Consequently, articles not represented on the stoplist must be included in the search by the user. The stoplist error detected by this sample involved the German article *das*, which is not included on the LCS stoplist. The user searched "Freundschaftsbild der Romantik" and found no matching LCS record. However, a matching record, titled "Das Freundschaftsbild der Romantik," is in the database. Because *das* is not listed on the stoplist, the title must be searched with the article to retrieve the matching record.

These data support previous findings that patrons have difficulty with corporate authors, punctuation, and with finding records in large files.

Previous studies have indicated that spelling errors represent a much larger proportion of catalog failure. Dickson reported that 64% of title failures were due to incorrect spelling, and Henty found 33% of unsuccessful keyword entries were spelling errors. In both cases, this information was compiled from transaction log analyses. One limitation of transaction log data is that they cannot identify if a search is eventually successfully completed or not. Data collected in this study suggest that a significant proportion of those were typographical errors, rather than spelling errors, which the user corrected.

Catalog Error

Catalog error, those errors over which the patron had little or no control, accounted for 116 of the sample of 226 or 51% of the error cards. Unlike the user errors, catalog errors proved to be more evenly distributed throughout five subcategories. Figure 2 depicts the type of errors found.

Corporate word order accounted for 28% of the catalog errors and is the largest of the five categories. These errors are due to user confusion in interpreting corporate authors and are particularly evident in the searching of conference proceedings. These results support Krikelas' and Gouke and Pease's findings that, as the bibliographic complexity of the title increases, the success of locating the corresponding online record decreases. That many citations combine the corporate author into the title—for example, *Proceedings of the First International Conference on Fracture*—is a source of considerable confusion. Nearly all of the requests for conference articles were cited in this manner.

Searches that resulted in a very large number of matches accounted for 24% of the catalog errors. Most often these were one- or two-word titles such as, *Scientific American*, *Science*, or *Aperture*. And while some searches produce too many matches, other searches produce too few. If the user is lacking either the third or fourth word or perhaps a subtitle, LCS will not retrieve the record without truncation. Without truncating, for example, the search for *Euphorion* will not retrieve any records for the title cataloged as *Euphorion: Zeitschrift Für Literaturgeschichte*. In this instance LCS requires that the subtitle be included to retrieve the record. This type of truncation problem accounted for 10% of the catalog errors.

Punctuation problems appeared in 22% of the catalog error items. Of the twenty-five errors, ten were hyphenation problems in the first four words of the title. Examples are: *HaydnStudien*, *Problem-Solving Processes of College Students*, and *Robotics and Computer-Integrated Manufacturing*. The remaining 15 are foreign-language titles, including punctuation, that, if keyed into the search string, cannot be interpreted by LCS. *Late Ch'ng Views on Fiction* is an example of this. Users' difficulty with hyphenation was noted by Gouke and Pease. Henty found that 14% of keyword failures were due to punctuation errors. Unlike spelling errors, however, these data suggest that users are not correcting

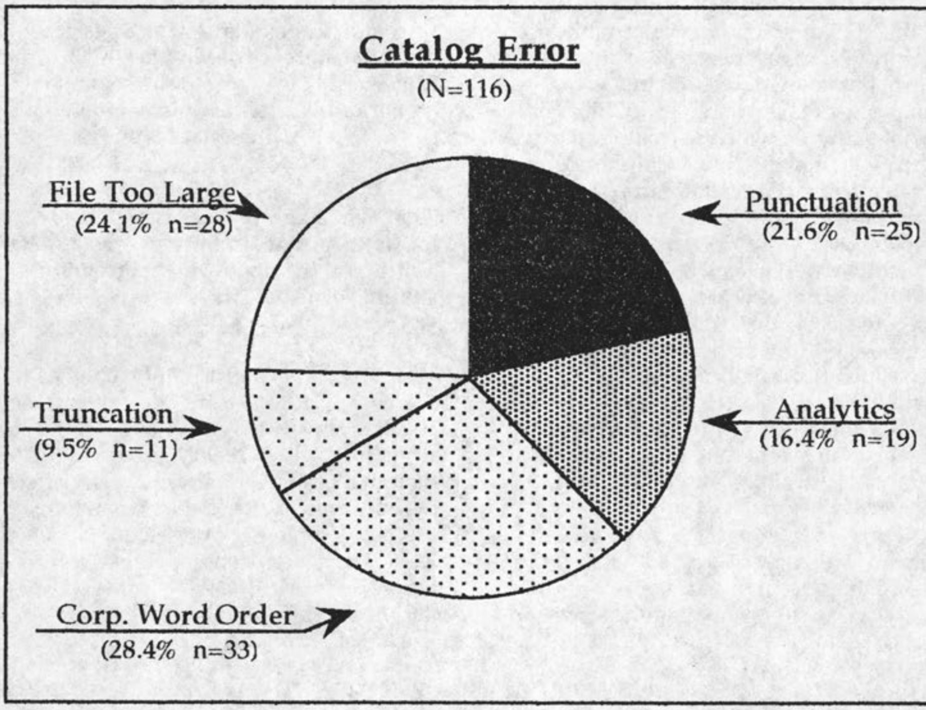

FIGURE 2
Catalog Error by Subcategory

punctuation errors—particularly those involving foreign names and titles.

Analytics for items cataloged before 1983 are not yet represented in LCS. For example, Anna Rutledge's *Artist in the Life of Charleston* is volume 39 of the *Transactions of the American Philosophical Society*. Only the pre-1986 serial title is accessible on Ohio State's online system. The user must not only know the title of the series and the volume number but must also know how to search by the series title. Failure to identify successfully these items represents 16% of the catalog error. While this represents a source of error unique to Ohio State's LCS, it does suggest that analgesics are an important part of the bibliographic information available in the catalog.

CONCLUSIONS

Overall, the catalog failure data collected through interlibrary loan supplement the findings based on interviews, questionnaires, and online observation methods. These data support previous findings that patrons have difficulty with corporate authors, punctuation, and with finding records in large files. However, the data suggest that spelling errors, although they may be common among search transactions, do not prevent users from finding the correct online record. Further, it appears that stoplist words and truncation are being used successfully by at least some users. It can only be speculated as to why such a large proportion of users made no apparent errors but failed to locate the online record. However, anecdotal evidence from the ILL staff suggests that many of these users failed to search the online catalog before submitting an ILL request.

A significant portion of the user population, apparently, comes to the online catalog with an incorrect citation. Most likely this source of error is from the user's relying upon memory of a citation. However, incorrect prepublication information or incorrect citations are also possible sources of this error. Although not available at Ohio State, Boolean or keyword searching, particularly on the full bibliographic record, may retrieve the desired record although complete bibliographic information is lacking.

However, Boolean or keyword capability may not affect all types of searches. Because users typically search corporate authors by title rather than author, it is doubtful that such capability searching would improve retrieval. That even experienced users fail to locate corporate authors suggests that additional bibliographic instruction should focus on this issue.

These data suggest that punctuation errors are most likely to occur while searching foreign authors or titles. However, when punctuation errors appeared in English-language titles, it was often the presence of a hyphen in the first four words that aborted the search. Perhaps more added entries could reduce the number of punctuation errors.

That even experienced users fail to locate corporate authors suggests that additional bibliographic instruction should focus on this issue.

Finally, the number of matches a search retrieves is a function of catalog size, search strategy employed, and the structure of the search algorithm. Although altering the algorithm may affect the number of matches, the search strategy the user employs can profoundly affect what is retrieved. Consequently, user education could significantly influence this failure also.

REFERENCES AND NOTES

1. Ruth Hafter, "The Performance of Card Catalogs: A Review of Research," *Library Research* 1:199–222 (Summer 1979); E. A. Montague, "Card Catalog Use Studies 1949–1965," (Master's thesis, Univ. of Chicago, 1967).
2. Sammy R. Alzofon and Noelle Van Pulis, "Patterns of Searching and Success Rates in an Online Public Access Catalog," *College & Research Libraries* 45:110–15 (Mar. 1984).
3. Mary Noel Gouke and Sue Pease, "Title Searches in an Online Catalog and a Card Catalog," *Journal of Academic Librarianship* 8:137–43 (July 1982); Sue Pease and Mary Noel Gouke, "Patterns of Use in an Online Catalog and a Card Catalog," *College & Research Libraries* 43:279–91 (July 1982).
4. Renata Tagliacozzo, Lawrence Rosenberg, and Manfred Kochen, "Access and Recognition: From User's Data to Catalogue Entries," *Journal of Documentation* 26:230–49 (Sept. 1970).
5. Jean Dickson, "An Analysis of User Errors in Searching an Online Catalog," *Cataloging and Classification Quarterly* 3:19–38 (Spring 1984).
6. Jerry Specht, "Patron Use on an Online Circulation System in Known-Item Searching," *Journal of the American Society for Information Science* 31:335–46 (Summer 1980).
7. James Krikelas, "Searching the Library Catalog—A Study of Users' Access," *Library Research* 2: 215–30 (Fall 1980).
8. Ben-Ami Lipetz, "User Requirements in Identifying Desired Works in a Large Library. Final Report," Yale University Library, New Haven, Conn., ED 042 479.

Reconciling Pragmatism, Equity, and Need in the Formula Allocation of Book and Serial Funds

Charles B. Lowry

The literature of formula allocation has several central themes which the matrix formula described here addresses. Most important, formulas have almost universally failed to provide a mechanism to distribute funds for serials as well as books. The matrix formula allocates funds for monographs and serials based on disciplinary needs and publishing patterns. It also provides a method for determining the variables which best represent institutional goals, normalizing them and explicitly determining the percent of funds allocated by the individual variable. These features are great advantages in dealing fairly with the difficult problems of allocating scarce resources. Finally, the article discusses the appropriate limits formulas may have as allocation tools.

About ten years ago a colleague responded to one of my enthusiastic discussions of what I will call the matrix formula with a comment that "all formulas are to a certain extent derivative." It is fair to ask why anyone should revisit the topic of formula allocation of acquisition funds, given the extensive discussion of it in the literature. Keeping my colleague's response in mind, I believe that gains are to be made in the allocation of scarce resources if librarians build on earlier work and find new ways to reuse what has been accomplished. This paper does not review the literature of formula allocation, but rather points to examples of earlier work that inform the matrix formula or to problems that the matrix formula arguably resolves. For readers who wish to explore past research, the review essay by Mary Sellen, published in *Collection Management*, is a fair place to start for discussion of what has been done. Both Donna Packer's and Fabian A. Ehikhamenor's articles also provide a window on the literature of the subject.[1]

John Budd and Kay Adams's recent study, which involved a survey of 834 academic libraries (43% return rate), indicates that libraries' use of allocation formulas has declined. In the 1940s about 73% of college libraries indicated a use of formulas whereas today only 41% "report using some sort of formulation for the allocation of materials resources."[2] Nonetheless, formula allocations are clearly going to remain a part of the library scene, and I believe they are a preferable alternative to leaving things to chance, incremental budgeting, or historical precedent, so long as librarians understand the specific limitations that characterize this budgeting mechanism. This is not to say that historical precedent or incremental budgeting fail on all counts as funding mechanisms, but that they may particularly discriminate against disciplines with rapidly changing literatures or newly established curricula and

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research emphases. For instance, recently there has been a call among psychologists to move toward collection use, publication cost, and similar empirical data as part of the criteria for distributing acquisition funding, exactly as formulas have often done. Some psychologists assert that research libraries defend their fund allocations to various disciplines by comparing one discipline to another. This process effectively bars change and places psychology at a disadvantage.[3]

In collection development libraries have numerous objectives that may not be adequately addressed by a formula approach like the one described here. In spite of varied objectives, a formula can be useful for allocating part of the budget. For instance, at the University of Texas at Arlington (UTA) the funds allocated to reference collections, special collections, media, foreign languages, documents, and "enrichment" (largely retrospective purchases by bibliographers) all lie outside the formula. Similarly, a large research library collecting comprehensively in specified subject areas may allocate to these areas outside of the context of a formula. Yet a small or medium-sized academic library may allocate effectively a large part of its budget through the formula process. At UTA in fiscal year 1990–91, 74% of the $1,750,000 acquisitions budget was distributed through the matrix formula.

On the one hand, the adoption of a new formula is often a by-product of some budgetary crisis that compels a change in materials funding. On the other hand, the numerous obstacles to the introduction of a formula or to changing an existing one are well known. Institutional interest group politics, the open decision-making process practiced in the academy, and simple inertia are all forces that have a significant role influencing the development of formulas. Jasper Schad in the late seventies and Donna Packer more recently both addressed at length how these forces may interact.[4] Those who benefit from the status quo will not want to investigate alternative budgeting mechanisms. However, those who are disadvantaged by existing policies may assume that nothing will change and may not make any effort to abet the adoption of a new method. A key problem, both inside and outside the library, is the confusion that inevitably occurs in distinguishing between means and ends. Everyone wants to begin at the end—that is, to know what the formula will give them in real dollar terms. The natural focus of a particularist's interest is selfish. The general good, that is, the general ends of equitable distribution of limited resources, the balanced growth of the collection, and the meeting of *bona fide* instructional or research goals of the institution can be lost in this process.

Several years ago Jasper Schad addressed what he termed "justice principles" for fairness in allocation of book funds. By inference these principles may also be applied to serials. "The principle of need specifies that funds be distributed according to the particular requirements of each discipline . . . ; the principle of contributions stipulates that funds be apportioned on the basis of the degree to which each department serves the institutional mission . . . ; [and] the principle of equality affords each recipient an equal share, regardless of differences in need or output."[5] The matrix formula can be used to reconcile these competing principles.

Deciding on a formula may itself be a daunting undertaking. Rare is the faculty member, or for that matter the librarian, who is willing to digest the mountain of published literature necessary to developing a comprehensive plan that satisfies the general institutional interests. Often the formulas discussed in the literature are akin to Rube Goldberg contraptions, fascinating to watch, but overly elaborate means to ends. The rule should be to avoid spurious sophistication in the development of formulas. William E. McGrath, in his often quoted article, stated that "formulas must make sense. They must be based on sound theory backed up by empirical data. The difficulty is that no such theory has yet been presented."[6] I generally find more in McGrath's article to agree with than not, but to call for a theory of allocation formulas seems to me to miss the point. Gary M. Shirk was even more explicit in his call for "A defensible theoretical framework that relates objective variables to the collection's performance in a meaningful way."[7] Few such attempts at theory building have been made. A notable exception is James A. Yunker and Carol G. Covey, who attempted to "build on prior work by means of operationalizing the economic approach. This requires the specification of an explicit hypothesis concerning the affect [sic] of library operations on social welfare which utilizes measurable dimensions of these operations."[8] Yunker and Covey use a theory of social utility as a basis for building a library formula.

However, I believe that the theory called for will never emerge, because allocation formulas are a mathematical means for distributing fiscal resources. The belief that there is a theory waiting to be found is at best an a priori assumption or at worst a misuse of the generally accepted notion of social science theory, which is usually an explanatory theoretical hypothesis such as the "theory of the leisure class" or the "quantity theory of money." In this sense, theory is no more than a generalized explanation of observable social phenomena. Quantitative empirical verifiability may not even be an objective in many cases of social science theory.

In the strictest sense, allocation formulas are—to use T. S. Kuhn's concept—paradigms that explain the empirical basis for distributing library material funds. As such, they become tools for budget decision making, not hypotheses for theory building. Kuhn, a physicist and historian of science, used the concept of paradigm to challenge the predominant conception of the philosophy of science, the hypothetico-deductive view of Karl Popper, and to forward the notion of a "normal science" as it is really practiced by scientists. But the concept of paradigm was quickly embraced in the social sciences and is used here in an applied sense. Philosophically speaking, a formula qua paradigm is an "artifact which can be used as a puzzle-solving device; not a metaphysical world view." "The paradigm is something which can function when the theory is not there."[9]

Formulas generally take care of basic current needs, not retrospective collection development. They are difficult to apply to some disciplines, such as foreign languages, and to interdisciplinary departments; they are frequently difficult to understand without considerable study. Two examples from Budd's recent article are illustrative of the problem (figure 1 and figure 2).[10] These formulas may be quite adequate. But they require considerable study if anyone is to comprehend the interrelationships of the variables and their net effect on allocations. This inaccessibility is an obstacle

FORMULA = [.157446 + .0024(B) + .061(C) + .1979(D) + .0135(E) + .000005(F) + .0003(G) + .0445(H)]/ 1.7 = department percentage

B = number of undergraduate majors

C = number of graduate majors

D = number of FTE faculty in the department

E = number of 5-hour courses taught by the department

F = number of volumes in the library in the specific subject area

G = number of volumes circulated in the group identified in F

H = average price as reported in *Publishers Weekly*

FIGURE 1

Figures 1 and 2 are illustrative of the diversity of formulas currently in use and the obstacle their complexity presents to ready understanding.

Unit Cost

$$u = B\left[sch^1\left(\frac{10}{SCH^1}\right) + sch^2\left(\frac{20}{SCH^2}\right) + sch^3\left(\frac{20}{SCH^3}\right) + c\left(\frac{30}{C}\right) + co\left(\frac{10}{CO}\right) + f\left(\frac{10}{F}\right)\right]$$

Final calculation

$$D = \frac{A}{u} \times u + \$1{,}000$$

A = Total nonserial allocation

B = Bowker average price per volume

*__c__ = Circulation

*__co__ = Course offerings

D = Departmental allocation

*__f__ = Faculty

*__sch__ = Student credit hours
[1]lower division
[2]upper division
[3]graduate

*__u__ = Unit cost.

FIGURE 2

to determining precisely how the formulas relate to the collection development goals of the library.

INSTITUTIONAL POLITICS AND RESOURCE ALLOCATION

Whether faculty are deeply involved in selection (as they are at UTA) or selection is totally in the hands of librarian bibliographers, decisions must be made about the allocation of funds to disciplines. This process may be the result of the piecemeal accretion of numerous decisions about individual titles or the prior allocation of a specific amount of acquisition funds for each discipline. Formulas for allocating library materials budgets have developed for two primary reasons. The first, the need to allocate limited resources on a basis of equity and need, is commonly understood and broadly discussed in the literature. The second reason for applying a formula is little discussed in the library literature. Formulas are extremely useful in solving the political dilemmas of unequal resource allocation. No library has the unlimited resources needed to purchase all the available relevant materials. It follows that the politics of allocating materials funds is critical to the process of dividing resources, whether funds are allocated to individual departments or to subject bibliographers for the purpose of collection development. In either case, the dynamics of local politics play an important, if not dominant, role in how funds are allocated.

Over time, patterns of influence, personal connection, organization, and historical anomalies combine to influence allocation of resources in ways which may or may not meet the institutional mission of the library. In combating the vagaries of these influences, libraries have traditionally turned to formulas that emphasize the use of "rational" or "empirical" variables as a basis for resource allocation. Variables include factors of institutional program size and productivity, such as number of faculty and students or credit hour production and extra-institutional measures like recent price experience in the book and journal publishing universe. Compelling arguments can be made for the legitimacy of such variables as part of an allocation formula, but emphasis on them has tended to reverse the order in which we think about formulas. Discussions in the literature rarely proceed from the development of a methodological model or explanatory paradigm—that is, the formula—to the process of deciding what variables should be used and where we should get data to support them. Often this inversion is because we have *not* explicitly and overtly accepted the fact that allocation is inherently political in nature with a result that variables and supporting data which have the highest likelihood of acceptance by the institutional units or individuals with a stake in the process are accepted. This process means that the methodology of the formula itself and the relationship of variables to institutional goals are ignored or given insufficient attention.

The alternative course suggested here is to accept the political component of the budgetary allocation process and, accordingly, to identify a model that is acceptable to those factions involved in the budgetary process. The faculty advisory committee, the library's collection development group, or whoever else is involved in the allocation of funds will be better served by a process requiring an explicit articulation of the factors that will be used in determining distribution of fiscal resources. The matrix formula is a context for considering the philosophical case to be made for any variable and at the same time knowing with precision who gains or loses by its inclusion.

STRUCTURE OF THE MATRIX FORMULA

The matrix formula is largely the product of cooperative efforts between the libraries and faculty library committees of four institutions—University of North Carolina, Charlotte; Elon College in North Carolina; University of South Alabama; and the University of Texas at Arlington. These efforts began over fifteen years ago. The formula has been largely evolutionary in its development, and its features have been positively influenced by the continued scrutiny and discussion of librarians and faculty who had a large stake in making it work effectively. The basic framework of this paradigmatic formula is transportable to many institutions, but within the formula each institution devises variables that fit local needs.

The term *matrix* was chosen because it describes the grid showing each of the variables and their distribution among the various departments. An early version that allocated only book funds to departments at Elon College is shown in table 1. The variables are fairly obvious as is the weighted percent share of each variable by the departments. One of the consistent mathematical problems with formulas is that diverse variables are thrown together willy-nilly without giving consideration to the fact that they are apples and oranges.[11] The simple mathematical approach to normalization is to reduce each variable to a percentage of the total for the raw data. For instance, the faculty full time equivalent (FTE) index and the freshman sophomore credit hours (table 2) for thirty-two different departments at UTA (1987–88 academic year) are converted to straight percentages and thus become comparable. This mathematical operation allows any variable to be compared arithmetically to any other variable.

The representation of a variable as a normalized percentage is similar to the use of the raw-data variable in one very important respect. They are both mathematically linear in their effect. The brief discussions in our literature do not do justice to the topic of tempering variables through the use of logarithms.[12] The basic reason for moving from a linear to a logarithmic approach relates to the aphorism that "what counts easiest should not count most."[13] The examples of table 2 are illustrative of the problem. Several departments have extraordinarily high productivity levels in freshmen and sophomore credit hours. For instance, the Departments of English, History, and

TABLE 1
ELON COLLEGE BOOK ALLOCATION FORMULA—SPRING 1979

Department	Business and Economics	Education and Psychology	Fine Arts	Human Services	Language /Literature	Philosophy	Physical Education	Religion	Social Sciences	Biology	Total
Variable											
% books published x5	41.6	56.55	14.45	5.15	99.45	15.30	35.85	31.70	169.50	30.45	500
% average book cost x4	41.2	36.44	41.60	29.52	30.28	44.92	40.40	29.76	38.20	67.68	400
% FTE faculty x3	41.07	24.36	37.11	8.67	73.89	7.86	22.38	15.72	47.97	20.97	300
% number students at 100–400 course levels x2	38.48	21.04	12.76	4.78	40.98	4.36	27.38	11.44	30.32	8.46	200
% graduating seniors x1	38.79	8.59	3.32	10.80	3.32	.27	9.70	1.66	13.58	9.97	100
Total weighted value	201.14	146.98	109.24	58.92	247.92	72.71	135.71	90.28	299.57	137.53	1500
% book allocation	13.41	9.8	7.29	3.93	16.53	4.84	9.04	6.02	19.97	9.17	100

Mathematics range from 21,000 to more than 35,000 credit hours for the year in question. A strong case can be made that as the number of credit hours generated increases, particularly in large classes of service courses with many sections, there is a diminishing need to provide book funds to support credit-hour production. Put another way, in the allocation of acquisition funds, the credit hours produced by the first student to enroll in a large lecture class should count far more than that for the 251st student. Figure 3 shows a simple linear and logarithmic plot of the same increasing values of 1–10. The logarithmic plot dramatically dampens the effect of the increase in the size of the number. Figure 4 illustrates what happens when logs are applied to the raw variable of credit-hour production. Similarly, table 3 shows the conversion of raw credit-hour production to logged data and finally to a logged percent. The diminishing effects of this conversion on the larger CHP numbers are evident when comparing the logged to the linear percent.[14]

Weighting is the other mathematical transformation of variables that should be discussed more broadly in the literature. "In much of the literature there is an implicit acceptance of an equal weight for each of the variables in the formula."[15] Nevertheless, weighting is an acceptable technique for modifying the base value of variables so that they are unequal. Decisions about weights determine the extent to which Schad's principle of equality will be applied. The matrix formula under discussion here provides an explicit mechanism for weighting each variable, and the weighting is a distinctly understandable measure of the percentage of the funds allocated by that variable. Table 4 illustrates the weighting and the log value given to the variables presently in use at the University of Texas at Arlington Libraries. These weights and logs emphasize the point made earlier, that a formula should reflect the collection development goals of the institution. The explicit understanding of the effects of any one variable is made clear in a matrix formula. For in-

TABLE 2
ILLUSTRATION OF LINEAR DATA NORMALIZATION

	Faculty FTE Index Raw Data	Faculty FTE Index Linear Percentage Data	Freshman-Sophomore Credit Hours Raw Data	Freshman-Sophomore Credit Hours Linear Percentage Data
Architecture	43.24	4	5,767	2
Art	23.34	2	2,553	1
Accounting	38.19	4	9,855	4
Economics	28.80	3	9,948	4
Finance	29.76	3	207	0
Management	29.96	3	6,075	2
Marketing	19.08	2	0	0
Systems analysis	38.42	4	5,493	2
Aerospace engineering	22.24	2	3,461	1
Civil engineering	28.87	3	3,484	1
Computer science	40.15	4	6,104	2
Electrical engineering	48.78	5	3,830	2
Industrial engineering	14.69	2	0	0
Mechanical engineering	28.08	3	729	0
Education	16.55	2	650	0
Communications	30.10	3	11,165	5
English	48.91	5	26,883	11
History	33.23	3	20,265	8
Music	28.54	3	5,820	2
Philosophy	8.23	1	3,351	1
Physical education	21.46	2	11,684	5
Political science	28.54	3	18,840	8
Sociology	27.02	3	3,729	2
Nursing	52.89	5	0	0
Biology	36.27	4	15,350	6
Chemistry	35.04	4	10,196	4
Geology	17.56	2	2,344	1
Mathematics	55.00	6	34,435	14
Physics	32.43	3	15,045	6
Psychology	27.43	3	6,014	2
Social work	33.46	3	1,038	0
Urban affairs	9.81	1	0	0
Totals	976.07	100%	244,315	100%

TABLE 3
ILLUSTRATION OF LOGARITHMIC DATA NORMALIZATION

	Freshman-Sophomore Credit Hours Raw Data	Freshman-Sophomore Credit Hours Logged Data	Freshman-Sophomore Credit Hours Logged Percentage	Freshman-Sophomore Credit Hours Linear Percentage Data
Architecture	5,767	0.53	3	2
Art	2,553	0.31	2	1
Accounting	9,855	0.70	4	4
Economics	9,948	0.71	5	4
Finance	207	0.04	0	0
Management	6,075	0.54	3	2
Marketing	0	0.00	0	0
Systems analysis	5,493	0.11	3	2
Aerospace engineering	3,461	0.38	2	1
Civil engineering	3,484	0.38	2	1
Computer science	6,104	0.54	3	2
Electrical engineering	3,830	0.41	3	2
Industrial engineering	0	0.00	0	0
Mechanical engineering	729	0.11	1	0
Education	650	0.10	1	0
Communications	11,165	0.75	5	5
English	26,883	1.08	7	11
History	20,265	0.97	6	8
Music	5,820	0.53	3	2
Philosophy	3,351	0.38	2	1
Physical education	11,684	0.76	5	5
Political science	18,840	0.94	6	8
Sociology	3,729	0.40	3	2
Nursing	0	0.00	0	0
Biology	15,350	0.86	6	6
Chemistry	10,196	0.71	5	4
Geology	2,344	0.29	2	1
Mathematics	34,435	1.18	8	14
Physics	15,045	0.85	5	6
Psychology	6,014	0.54	3	2
Social work	1,038	0.15	1	0
Urban affairs	0	0.00	0	0
Totals	244,315	15.57	100%	100%

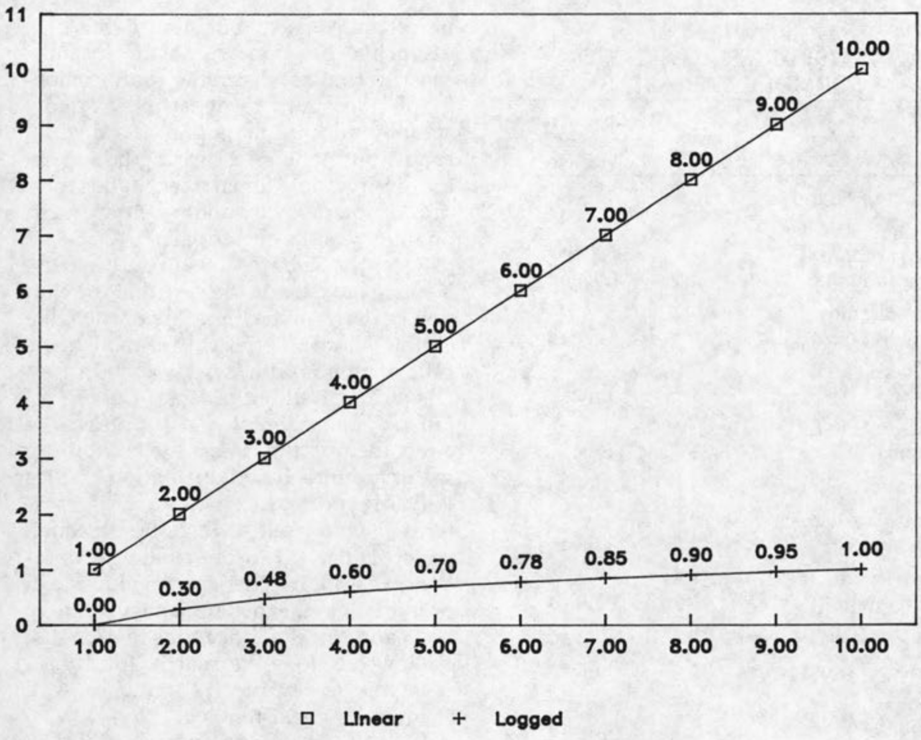

FIGURE 3. Linear versus Log Base 10 Plots

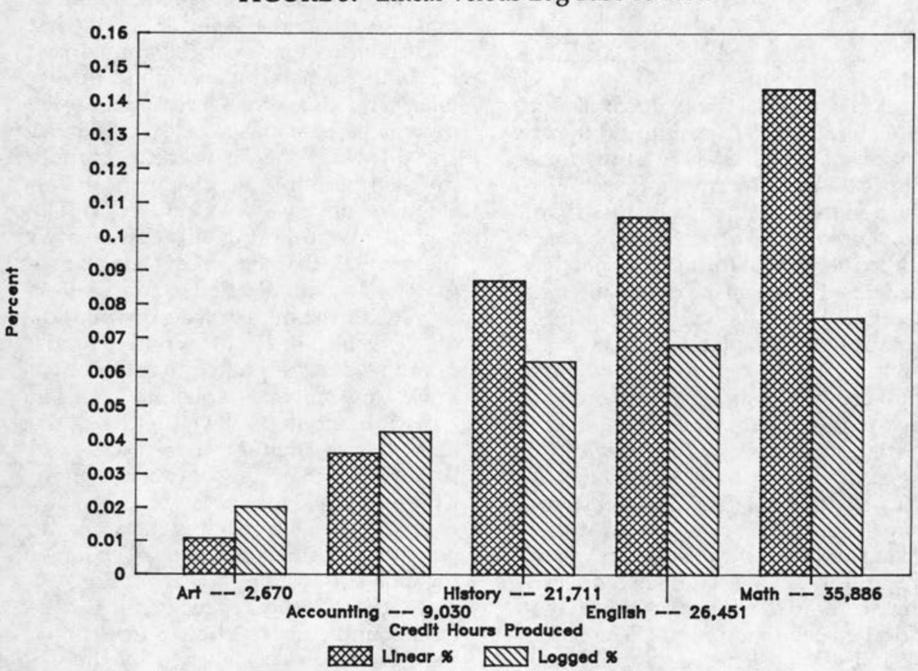

FIGURE 4. Linear versus Logged Percents of CHP

TABLE 4
UTA LIBRARIES ALLOCATION FORMULA VARIABLES

Variable Name	1988–89 Weight %	Logged or Linear Variable
Faculty FTE Index	10	Linear
Freshman-sophomore credit hours	1	Logged
Junior-senior credit hours	1	Logged
Master's credit hours	3	Linear
Doctoral credit hours	12	Linear
Library Use Index	5	Logged
Graduate degrees index	5	Linear
Undergraduate degrees index	3	Logged
Book cost index	21	Linear
Serials cost index	21	Linear
Publications index	15	Linear
External grants index	3	Linear
Total	100	

stance, the emphasis on doctoral and postdoctoral work, research, and the acquisition of grants at UTA sums for a total of 30% of the formula, that is, 30% of the dollars are allocated by these variables. Moreover, all of these variables are linear in the present formula so that they have a direct effect on the dollar outcome proportional to the individual departmental share of the variable.

Another unique feature of the matrix formula is the Book/Serial Dependency Index. Within the formula it has several important functions that help tailor the outcomes of the formula to the idiosyncracies of different disciplines, thus adhering to Schad's "principle of need." The size and cost of the book and serial literature of each discipline frequently dominate the discussion of variables that should be used in a formula. The use of book and serial pricing as a variable will be discussed later, but here it serves a distinctive function within the formula. Most formulas distribute only monograph allocations to departments. A few actually allocate monograph and serial funds, but none give direct guidance in the individual department allocation proportions which should be expended on monographs and serials.[16]

Recently, Robin B. Devin and Martha Kellogg have made the case that the citation patterns in the literature of each discipline should be used to establish the ratio of monograph/serial expenditures. Devin and Kellogg fall into the logical fallacy *pro hoc, propter hoc*—putting the effect before the cause.[17] Distributing material funds based on citation studies will not produce those same citation patterns. It may well disturb the collection patterns that led to the citation proportions. Distributing departmental funds in proportion to the total monetary value of book and serial publications in each discipline—as does the matrix formula—seems more empirically sound, as well as logically consistent.

The effects of the Book/Serial Dependency Index are demonstrated in table 5 (see pages 132 and 133). The first two columns represent the annual cost for both formats by discipline during one year. This is directly computed as the percentage dependency index (columns 3 and 4), which then is used to compute the distribution of the departmental allocation between books and serials. The use of this proportionality is based on the rationale that the cost of the universe of scholarly publications more or less represents the appropriate distribution of expenditures of local funds. Moreover, it is arguable that the actual publication of monographs and serials in a discipline reflects the structure of the discipline's communication process and results in the characteristic citation pattern that the discipline evinces.

Vital to this approach is the accurate, dependable, and consistent collection of the data supporting it. This very important data-collection process will be discussed in the next section. Surprisingly, the proportions established by the dependency index have gained easy acceptance by faculty and the library advisory committees at both institutions—the University of South Alabama and the University of Texas at Arlington—where I have applied them over the last ten years. The total UTA dependency index is heavily weighted toward serial expenditures. This weighting does not necessarily result in an equivalent distribution of funds due to the use of other weighted variables. Not surprisingly, science disciplines have tended to expend their full serial allocations under the formula. Although scientists have accepted the limits the formula dictates, they have still expressed a strong desire to add more titles to the subscription list when other disciplines have not. At present, departments with serial obligations that exhaust their allocation cannot add new serial titles without canceling title subscriptions of equal value. Incidentally, this practice requires that the UTA Library assign every title in the serial collection to either a department, a college, or the library's own general serial fund.

CHOOSING VARIABLES—SOME COMMENTS

The choice of variables and the collection of the data to support them are the dominant themes of the literature on formula allocations. Indeed, the implication often is that the variables are equivalent to the formula. The contention here is that the adoption of an explicit mathematical model or formula paradigm is the first and perhaps the most important step in developing an allocation formula, and that the choice of variables which follows should be dictated by the institutional objectives. Variables should be chosen in light of local conditions and institutional goals. The selection of variables is important, and plenty of discussion in the literature attests to this fact.[18]

One of the key issues in variable selection is the dichotomy among variables that may be chosen. Sweetman and Wiedemann refer to this as the supply side and demand side.[19] Put simply, this is the difference between internal variables generated by programs within the institution and external variables such as the price of library materials or the citation characteristics of the individual disciplines.[20] A large variety of variables are in use in library allocation formulas, but a handful have clearly become dominant, including "number of students or number of student credit hours, cost of materials, number of faculty, circulation by department or subject area, number of courses offered by a department, and the number of students majoring in a department or subject area."[21] Most of these variables involve Schad's principle of contribution, and the matrix formula allows their dollar effect to be explicitly specified.

The matrix formula gives more or less complete flexibility in developing variables to fit the local situation.

At present, twelve variables are being used in the matrix formula at the University of Texas at Arlington (table 4). There is a point at which selecting new variables to "enhance" the matrix formula has a diminished result. As the number of variables increases, the weighted percent share must be reduced. New variables are usually suggested to correct some perceived oversight, but twelve is probably the practical limit. Substituting new variables for old ones is probably better when that limit is reached. It bears repeating that the matrix formula gives more or less complete flexibility in developing variables to fit the local situation. To illustrate, I have often joked that there could be a variable for blue-eyed full professors in each department if that were perceived as an appropriate criterion for distribution of materials funds.

Two variables merit brief discussion: the Library-Use Index, an internal variable, and the Book/Serials Cost Index, an external variable. The literature discusses Library-Use Variables a great deal and explores the numerous inherent problems. I think that we have addressed this variable at UTA in a consistent and logical

TABLE 5
UTA BOOK/SERIAL DEPENDENCY INDEX

	Book Cost Index (BNA Universe)	Serials Cost Index (FAXON Universe)	Book Dependency Index(%)	Serial Dependency Index(%)	Current FY Book Budget Allocation	Current FY Serial Budget Allocation
Architecture	$ 26,406.00	$ 17,794.42	59.74	40.26	$ 14,682.12	$ 9,893.96
Art	58,316.00	46,538.03	55.62	44.38	11,035.68	8,806.83
Accounting	6,514.00	14,113.60	31.58	68.42	7,629.88	16,531.32
Economics	49,615.00	233,471.66	17.53	82.47	8,061.22	37,933.42
Finance	5,358.00	141,522.63	3.65	96.35	1,688.23	44,591.86
Management	58,522.00	173,433.49	25.23	74.77	12,674.59	37,561.91
Marketing	5,021.00	41,742.09	10.74	89.26	2,662.40	22,133.85
Systems analysis	31,776.00	44,715.50	41.54	58.46	16,749.81	23,570.50
Aerospace engineering	23,845.00	18,185.63	56.73	43.27	13,084.59	9,979.09
Civil engineering	15,262.00	145,985.03	9.46	90.54	4,192.43	40,101.70
Computer science	9,554.00	61,508.98	13.44	86.56	5,164.77	33,250.97
Electrical engineering	35,955.00	125,470.14	22.27	77.73	14,369.10	50,143.05
Industrial engineering	27,573.00	24,166.88	53.29	46.71	13,673.25	11,984.18
Mechanical engineering	20,716.00	172,665.29	10.71	89.29	5,743.77	47,873.62

TABLE 5 (continued)
UTA BOOK/SERIAL DEPENDENCY INDEX

Education	30,865.00	58,285.52	34.62	65.38	7,597.26	14,346.00
Communications	20,008.00	29,002.40	40.81	59.19	6,227.24	9,032.86
English	115,726.00	11,892.98	90.68	9.32	34,262.07	3,521.06
History	98,392.00	93,256.68	51.34	48.66	23,274.33	22,059.58
Music	18,014.00	17,995.70	50.03	49.97	5,165.54	5,160.30
Philosophy	57,722.00	34,906.65	62.32	37.68	10,804.07	6,582.00
Physical education	16,209.00	18,143.86	47.18	52.82	6,685.52	7,483.57
Political science	71,470.00	135,198.12	34.58	65.42	13,470.34	25,481.52
Sociology	68,103.00	54,159.99	55.70	44.30	19,043.05	15,144.29
Nursing	36,116.00	133,434.43	21.30	78.70	11,489.30	42,448.45
Biology	118,186.00	510,387.60	18.80	81.20	17,458.30	75,393.85
Chemistry	41,593.00	409,450.84	9.22	90.78	8,119.39	79,929.05
Geology	24,123.00	132,030.96	15.45	84.55	4,781.73	26,171.57
Mathematics	40,741.00	130,011.60	23.86	76.14	15,742.57	50,237.26
Physics	76,631.00	283,301.98	21.29	78.71	13,775.46	50,927.37
Psychology	35,351.00	104,420.50	25.29	74.71	9,616.99	28,406.85
Social work	19,666.00	40,143.76	32.88	67.12	22,639.76	46,214.03
Urban affairs	19,187.00	30,284.11	38.78	61.22	10,261.81	16,196.89
Totals	$1,282,536.00	$3,487,641.05	26.89	73.11	$371,906.56	$919,093.44

fashion that resolves the empirical problems. First, we count all instances in which library materials are handled, whether during external circulation or reshelving inside the library, as a single unit of use representing a real demand or need. This practice means that a patron's browsing of a book or journal inside the library is equal to checking an item out. We make no attempt to determine who used library materials but rather assign the use by classification number to a specific department. We assume that the department that selected the materials should get credit for all use, whatever the discipline of the patron using the material. To use a simple example, if a student in the department of economics checks out John Kenneth Galbraith's *The Great Crash*, then the history department gets credit because it ordered the book. The collection of these statistics has gradually become easier as the library collection has been retrospectively converted. Once we complete the bar-coding project for our serials, we will be able to capture the internal browsing statistics and the external circulation through NOTIS as part of the reshelving effort and extract the data by generating reports from the circulation subsystem.

Collecting data on the cost of the literature is vital to the matrix formula in order to generate the Book/Serial Dependency Index.

I cannot state too strongly that collecting data on the cost of the literature is vital to the matrix formula in order to generate the Book/Serial Dependency Index. At UTA it is equally important as one of the key variables in our application of the formula since it is weighted to produce 42% of the allocation of funds. If all department programs were equal—i.e., the same enrollment, credit-hour production, and degree level—then this would be the only variable needed. Since the dependency indexes were first incorporated into the formula ten years ago, determining a source for prices has been a continuing problem, with many authorities consulted including *Publisher's Weekly*, the *Bowker Annual*, periodical tabulations in *Library Journal*, and laborious hand calculations from *Ulrich's*.[22] By 1978, the approval plan statistics of Blackwell North America were being published regularly. These represent as close to a comprehensive list of the annual output of academic library books in the English language as can be expected. The subject section of the BNA statistics is used as a basis for dividing this pricing information among the disciplines. Finding a similar statistical universe in published form for serial literature is next to impossible. At the University of South Alabama we gathered statistics by assigning all appropriate titles listed in *Ulrich's* to the various disciplines. At UTA we extracted the data from the entire FAXON database by assigning all titles to appropriate departments and then compiling their dollar value. This data collection has been accomplished manually in the past, but beginning in fiscal year 1989–90, with the help of UTA's Academic Computing Center, we developed a computer method for this purpose using data tapes provided by FAXON.[23] Computerization allows us, with far less effort, to assemble quickly the matrix formula's Serial Dependency Index from year to year and, incidentally, to look at increases in pricing on a title-by-title basis. On the other hand, the Book/Serial Dependency Index is vital both as a mechanism within the formula and as a variable for allocating funds. On the other hand, it is equally important to remember that the data used in the index at present primarily include costs for English-language books of North American and British origin and English-language serials of North American and West European origin.

A survey of the literature on variables shows one important lacuna, which is the need for allocation formulas to take into account somehow the collection-development policy of the individual institution. For example, a variable based on the Resources and Technical Services Division (now ALCTS) definitions of collection levels (teaching, advance research, etc.) might make it possible to continue building in defined areas of excellence. Similarly, analysis of weak areas in the collection could be built into a variable that would provide extra funding for a period of years to ensure that weak areas could "catch up." These are problems we are just beginning to tackle as the formula matures at UTA. Collection of variable data requires consistency from year to year, a public and open process, and accountability for data represented in the formula. New variables may be difficult to introduce because of the commitment that develops around the formula once established. We have used a strategy of assigning variables very small weights so that they gain acceptability, for instance, in the cases of the publication/research and grants variables at UTA.[24] It was argued in the Advisory Committee that research and publication take several years to develop. Accordingly, the variable data capture a five-year moving window of faculty productivity in refereed publications. This information is extracted from UTA's annually published list of "Faculty Publications and Creative Activities."

CONCLUSIONS

We expect and encourage the use of the matrix formula outside UTA. On request we have distributed copies of the LOTUS 1–2–3 formula programming to over a dozen other institutions. We have prepared a template program to facilitate use of the matrix formula by other institutions. We ask only that other libraries using the matrix formula give proper public credit and not distribute the formula further.

The structure of the matrix formula has a number of important features. In the first place, it allows total flexibility in the choice of variables. Any type and any number of variables can be used because they may be normalized on a linear or logarithmic base. In addition, each variable may be assigned a percentage weight that makes the dollar outcomes resulting from its use explicit to anyone who examines the formula, thus removing one of the complaints about the complexity of formulas. Additionally, administrators, faculty, and librarians can shift their energies from the often politically charged discussion of variables to the more fruitful questions of the institutional priorities involved. Variables may be changed from time to time in order to adapt the formula to changing needs in the institution.

Moreover, the formula helps to deal head-on with the statistical problem of multicollinearity and the resulting hunt for the surrogate variable, the "Holy Grail" of variables. Multicollinearity refers to the fact that some variables are basically measures of the different dimensions of the same thing. A glance back at table 4 is illustrative. In some sense, the variables FTE index, credit hours, the graduate degrees index, and the undergraduate degrees index all are representative of the size of specific disciplines at UTA and involve Schad's contribution principle. The literature devotes a great deal of statistical sound and fury to this issue. Within the matrix formula, the question is rendered moot by the fact that, while these variables represent similar measures of size, their specific effect or weight in the allocation of funds is clearly known. We determine the importance of each variable in our institutional setting by its weight and by whether the variable is logged or linear, allowing the question of collinearity to be put to the side. The total weight of the size of program, or contribution, variables in this case is 35%, and we do not concern ourselves about which is the best surrogate or proxy variable to use.

Finally, the formula allocates to each department book and serial funds. What is more, the formula gives a specific quantitative guide to the appropriate distribution of funds between serial and monographic expenditures in each discipline. Thus, the matrix formula is a powerful tool in dealing with the inexorable demand that serial expenditures place on the library budget because it gives a benchmark against which a department serial budget may be limited. At present, only eight of our departments are expending all of their serial allocation, and we have tended to be conservative in allowing departments to expand their serial expenditures so that others do not reach their limit. Unexpended serial funds may be used by the department for other material expenditures. However, in the end the matrix formula cannot overcome the central problem of budgeting—insufficient funds. Any formula may satisfy acquisition needs if sufficient funds are put into it. No formula will overcome inadequate funding.

REFERENCES AND NOTES

1. Mary Sellen, "Book Budget Formula Allocations: A Review Essay," *Collection Management* 9:13–24 (Winter 1987); Donna Packer, "Acquisitions Allocations: Equity, Politics, and Formulas," *Journal of Academic Librarianship* 14:276–86 (Nov. 1988); and Fabian A. Ehikhamenor, "A Formula for Allocating Book Funds. The Search for Simplicity and Flexibility," *Libri* 33:148–61 (Copenhagen: Munksgaard,1983).
2. John M. Budd and Kay Adams, "Allocation Formulas in Practice," *Library Acquisitions: Practice & Theory* 13:381–84 (1989).
3. "Are the Books Stacked against Psychology?" *APS Observer* 4:1, 10, 12–13 (May 1991).
4. Jasper G. Schad, "Allocating Materials Budgets in Institutions of Higher Education," *Journal of Academic Librarianship* 3:328-32 (Jan. 1978); and Packer, "Acquisition, Allocations," p.279–82.
5. Jasper Schad, "Fairness in Book Fund Allocation," *College & Research Libraries* 48:481 (Nov. 1987).
6. William E. McGrath, "A Pragmatic Book Allocation Formula for Academic and Public Libraries with a Test for Its Effectiveness," *Library Resources & Technical Services* 19:356 (Fall 1975).
7. Gary M. Shirk, "Allocation Formulas for Budgeting Library Materials: Science or Procedure?" *Collection Management* 6:46 (Fall/Winter 1984).
8. James A. Yunker and Carol G. Covey, "An Optimizing Approach to the Problem of Interdepartmental Allocation of the Library Materials Budget," *Library Acquisitions: Practice and Theory* 4:203 (1980).
9. Margaret Masterman, "The Nature of a Paradigm," in *Criticism and the Growth of Knowledge, Proceedings of the International Colloquium in the Philosophy of Science, London, 1965*, V. 4, ed. Imre Lakatos and Alan Musgrave (Cambridge: Cambridge Univ. Pr., 1970) p.59–89. This essay is a very accessible discussion of Kuhn's ideas, but focuses primarily on their implications for science. For a discussion of the use of paradigm in a social science, see David Hackett Fischer, *Historians' Fallacies, Toward a Logic of Historical Thought* (New York: Harper, 1970), p.161–63.
10. Budd and Adams, "Allocation Formulas," p.388.
11. See, for instance, Packer, "Acquisitions Allocations," p.283. The values for the western Washington formula are not normalized in any fashion and, therefore, are not truly comparable. This means the effect of different variables within the formula remains unclear. On the other hand, Yunker and Covey, "An Optimizing Approach," p.214 (see table 4 B) avoid this pitfall by reducing the variables to percentages before utilizing them within the allocation formula they propose.
12. See, for instance, Thomas J. Pierce, "An Empirical Approach to the Allocation of the University Library Book Budget," *Collection Management* 2:47 (Spring 1978).
13. For a discussion of the pitfall of quantification, see Peter Sweetman and Paul Wiedemann, "Developing a Library Book-Fund Allocation Formula," *Journal of Academic Librarianship* 6:269 (Nov. 1980).
14. The present allocation formula uses the log base 10 to compute the log percent for selected variables. Log percent decreases the slope of the line for a plotted variable (see figure 3), minimizing the effect of large differences in variables (see figure 4). The use of linear or log percents involves a conscious, though somewhat arbitrary, choice of the mathematical approach. Alternatively, regression analysis on the raw data could be used to choose the mathematical model which would give the "best fit" for the variables being used.

15. Sweetman and Wiedemann, "Developing a Library Book-Fund," p.275.
16. See, for instance, Donna M. Goehner, "Allocation by Formula: The Rationale from an Institutional Perspective," *Collection Management* 5:165–67 (Fall/Winter 1983); S. K. Goyal, "Allocation of Library Funds to Different Departments of a University—An Operational Research Approach," *College & Research Libraries*, 34:219–22 (May 1973); Joseph A. Kohut, "Allocating the Book Budget: A Model," *College & Research Libraries* 35:192–99 (May 1974); James A. Yunker and Carol G. Covey, "An Optimizing Approach to the Problem of Interdepartmental Allocation of the Library Materials Budget," *Library Acquisitions: Practice and Theory* 4:199–223 (1980); and Packer, "Acquisitions Allocations," p.284.
17. Robin B. Devin and Martha Kellogg, "The Serial/Monograph Ratio in Research Libraries: Budgeting in Light of Citation Studies," *College & Research Libraries* 51:46–54 (Jan. 1990). For a discussion of the fallacy *pro hoc, propter hoc* and its effects, see David Hackett Fischer, *Historians' Fallacies, Toward a Logic of Historical Thought* (New York: Harper, 1970) p.368.
18. Sweetman and Wiedemann, "Developing a Library Book-Fund," p.268–76, remains, in the opinion of the author, the best single discussion of the problems of selecting variables, data collection, and their use in formulas. It is worthwhile to consult also Ehikhamenor, "A Formula for Allocating," p.148–61; and William McPheron, "Quantifying the Allocation of Monograph Funds: An Instance in Practice," *College & Research Libraries* 44:116–27 (Mar. 1983).
19. Sweetman and Wiedemann, "Developing a Library Book-Fund," p.269–71; Yunker and Covey, "An Optimizing Approach," p.1991–223, discuss this issue at length focusing on the demand for use of materials and the supply, that is, cost of materials by discipline.
20. Budd and Adams, "Allocation Formulas," p.385–86; Devin and Kellogg, "The Serial/Monograph Ratio," p.46–54.
21. Budd and Adams, "Allocation Formulas," p.386.
22. For discussion of the use of some of these sources, see Yunker and Covey, "An Optimizing Approach," p.211–12; McGrath, "A Pragmatic Book Allocation," p.356–62; and Richard Hume Werking, "Allocating the Academic Library's Book Budget: Historical Perspectives and Current Reflections," *Journal of Academic Librarianship* 14:140–44 (July 1988).
23. See Adrian Alexander, "Serial Pricing in the International Market: Fifteen Years of FAXON Experience," *Library Administration and Management* 4:27 (Winter 1990). The FAXON Company "has been providing a detailed journal price information since 1975. Detailed price analysis based on the FAXON Serials Database appears in *Library Journal* and *The Serials Librarian*." However, these data are not comprehensive nor do they deal with the many anomalies in the database such as "bill later" titles, duplicate titles for various forms of delivery by mail, different price entries for inside and outside of country of publication, and the presence of titles that we would not normally attribute to a department or discipline—reference titles, handbooks, abstracts, indexes, and directories. The UTA computer work deals with these issues. The system also eliminates specific call number areas not related to our teaching and research mission. The missing prices in the FAXON database—due primarily to bill later and direct order titles—presented a problem. Currently, these titles are assigned the average cost for other titles in the discipline.
24. The grants index proved to be an extremely knotty problem. The debate in the library advisory committee concerning its use first involved how much weight to give it. Shortly, the discussion centered on whether to count the grants funded or their dollar value. This was ultimately resolved by adopting a small special formula to combine the total number of grants and their dollar values using the formula N=1+log

($value/1,000). This formula would give, for some possible grant sizes in chemistry, the following values of N:

Department of Chemistry	
Grants $ Value	N
$ 2,000	1.3
10,000	2.0
100,000	3.0
1,000,000	4.0
$1,112,000	10.3

The total N of 10.3 would then become a raw variable entry for the Department of Chemistry.

Users' Reactions to CD-ROM: The Penn State Experience

Cindy Faries

Currently, many academic libraries own CD-ROM systems. Using a self-designed questionnaire, this study surveyed users of CD-ROMs for two two-week periods in the fall of 1989 and the spring of 1990. The results provided valuable information about who was using the systems; which systems were the most popular; how patrons perceived help available to them; what type of instruction they would desire; and what suggestions patrons had to offer to improve service to this technology. As academic libraries increasingly adopt new technologies, user surveys such as this one will provide important information to librarians about implementing services and procedures.

By now, bibliographic and full-text databases on CD-ROM are a well-established facet of many academic libraries. In 1986, articles began appearing in *Library Literature* discussing the emerging technology of CD-ROMs and how libraries were beginning to use this technology.[1] Within two to three years, academic libraries began to report on studies or evaluations of patrons' responses to these CD-ROM systems. Most patrons were excited about these new products, but they did need some assistance using them. At the Pennsylvania State University, an evaluation of the CD-ROM area was conducted on two separate occasions: for a two-week period in September 1989 and for a two-week period in April 1990. The study was conducted in the General Reference Section of Pattee Library for two reasons: (1) this area was the first to introduce CD-ROM products into the Penn State Libraries and (2) General Reference has the largest number of CD-ROM systems in the library. This area, thus, had a large population of users who had been exposed to this new technology for a few years.

The purpose of the study was to determine how users were reacting to this new electronic reference area. The results would allow the section to improve service for these new reference tools and to be able to plan for future technological developments. A questionnaire and informal observation of patron behavior were used to gather information about users' reactions to the CD-ROMs. Because Penn State was one of the first academic libraries to install several CD-ROM products, the experiences and satisfaction of its clientele should prove valuable to other academic libraries as they implement CD-ROMs and more advanced technological resources.

REVIEW OF THE LITERATURE

Many, many articles have appeared in the literature in the past few years de-

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scribing users' reactions to CD-ROM products in a variety of libraries. Some of these articles deal with major evaluations of optical products both in the United States and abroad. Caroline Moore surveyed libraries using CD-ROM products in the United Kingdom while Jenny Stocks did a similar study of academic and special libraries using CD-ROMs in Australia.[2] Ching-chih Chen and David Raitt have written extensively on the use of CD-ROMs in a variety of libraries in the United States and Western Europe, and Barbara A. Rapp and others have written on the National Library of Medicine's field test of sites with MEDLINE on CD-ROM.[3,4] User studies limited to special libraries also exist. Most of these, including studies by Anchalee Chamchuklin and Aung-Myint, Beryl Glitz, Maureen Wong and others, and Peter M. LePoer and Carol A. Mularski discuss the use of MEDLINE in both U.S. and foreign university medical libraries.[5] L. Scott Rawnsley surveyed CD-ROM users in a law library and John J. Welsh reported on CD-ROM use in a government research library.[6] Carolyn Pope and Jean Reese have published separate studies of the use of CD-ROMs in university education libraries.[7] Finally, Sten Wiksten even reported on a Swedish public library's experience with CD-ROMs.[8]

Nonetheless, the largest number of articles describing users' reactions to CD-ROM are from university or academic libraries. Most of these articles are generic, describing general patron and sometimes staff reactions to a variety of CD-ROM products and services in university libraries.[9] Other articles examine experiences patrons have had using just one product.[10] Some articles also compare products, mostly WILSONDISC and InfoTrac, in university settings,[11] while Carol Reese compared the use of a manual index versus a CD-ROM index.[12] Gillian Allen has written about the types of CD-ROM training university students want and the appropriateness of database selection by university students using CD-ROM products.[13] Finally, Susan K. Charles and Katherine E. Clark have written about updating CD-ROM searching with online searching.[14]

BACKGROUND

In 1986, Pattee Library acquired InfoTrac, which was placed in the General Reference Section serving faculty, staff, graduate, and undergraduate students in business, the social sciences, and all the humanities except art and music. As the name implies, the section also handles many questions of a general nature from its primary clientele and also from other users who are not affiliated with the university. ERIC and Compact Disclosure arrived soon after InfoTrac. InfoTrac was canceled in the summer of 1988 because of repeated equipment failures and an inadequate response to this problem by the vendor. The resultant savings enabled the library to purchase six other products and to create the General Reference Section CD-ROM Area which currently consists of eleven products running on ten workstations. The eleven products include Readers' Guide, Business Periodicals Index, Social Sciences Index, Humanities Index, and the MLA Bibliography from Wilson; ERIC, PsycLIT, and SPORT Discus from Silver Platter; ABI/Inform and Dissertation Abstracts International from University Microfilms; and Compact Disclosure from Disclosure. The Humanities Index and the MLA share a workstation. All other products stand alone. A twelfth product, the Oxford English Dictionary (OED) from Tri Star, is made available to patrons only by special appointment because of its unique searching features.

When the CD-ROM area was set up, a separate service desk was established to handle CD-ROM questions because of heavy traffic at the reference desk. Staff in the reference section also work at this desk a few hours per week so that the CD-ROM desk coverage averages about 45 hours each week. Each workstation is equipped with instruction sheets, search strategy worksheets, and a thesaurus if available. All systems except ERIC, PsycLIT, and SPORT Discus have a first-come, first-served sign-up sheet allowing patrons thirty minutes to search. At the three Silver Platter workstations, sign-up sheets are put out for two weeks, and patrons can sign up for two hours per week limited to one hour per day in one-half-hour slots. Bruce Bonta and Sally Kalin's article, "CD-ROM Implementation: A Reference Staff Takes Charge," provides a full description of the implementation and layout.[15]

PROBLEM TO BE STUDIED

The CD-ROM area maintained this configuration nearly one year. As the librarians in the section grappled with various problems ranging from routine maintenance of machinery to educating users, several questions began to arise:

1. Who are the majority of users?
2. Which systems are the most popular, and are patrons using the appropriate systems for their needs?
3. How do patrons perceive the help available to them?
4. How long do patrons search, what results do they get, and are they happy with these results?
5. Are patrons using CD-ROMs to the exclusion of traditional print sources?
6. Finally, what suggestions can patrons offer to help improve the CD-ROM service area?

Several librarians in the section had formed impressions concerning the answers to some of these questions, and for other questions estimates could be made. However, as the Penn State Libraries began to add additional CD-ROM titles and to plan for other technologies such as loading databases on its online catalog, LIAS, more accurate answers and better knowledge of the user community were needed. Other studies of CD-ROM end-users have either (a) been very broad, looking at several libraries' initial impressions of CD-ROM products, (b) focused on a specific category of users, e.g., patrons in a law or education library, or (c) compared use of two or more products by library patrons. To date, no study of the user community in a busy university library reference area has been conducted. Answers to local questions, such as which systems are preferred by undergraduates and graduate students, or whether or not one group would like a class teaching CD-ROM use, or how well the various groups understand instruction sheets, can help other libraries of similar size and organization plan for better delivery of electronic resources.

METHODOLOGY

To answer some of these questions and to see how patrons were responding to this new technology in the library, a questionnaire was designed and handed out for two two-week periods in September 1989 and April 1990. SPORT Discus was on trial from the vendor and the OED was excluded because it is available only by appointment. The population studied were users of the General Reference Section in Pattee Library. The sample population consisted of those users who appeared at our CD-ROM area for the periods in which the survey was handed out. The survey was originally designed by the author to determine characteristics of the user community and their impressions of these systems to aid in a conference presentation in the fall of 1989. The survey employed multiple choice, dichotomous scale, Likert scale, and one open-ended question. The author studied surveys of CD-ROM use from other academic libraries and received feedback from five colleagues, but because of time constraints no pretest of the survey was carried out in the fall semester. As the spring semester began, the author wished to sample users again, but this time at the end of a semester. Certain questions were revised to make them less ambiguous and one additional question was added. Again, no pretest was carried out.

Ideally, questionnaires should be designed with precision and administered to obtain the most accurate results. Since this questionnaire was not pretested, and some questions were altered for the spring survey, the results cannot prove or disprove any initial hypotheses the author or her colleagues had. Time was a critical factor in getting the survey done, and the Reference Section was most interested in quantitative data concerning the user community. Therefore, while the data from the survey must be looked at with some skepticism, the data has provided the Reference Section with many explanations about the user community at Penn State and how we can best serve this community as we move to other technology initiatives.

THE RESULTS

Approximately 300 questionnaires were given out during each two-week period. Two hundred and sixty-nine (90%) surveys were returned in the fall, and 266 (89%) surveys were returned in the spring for a total of 535. The results from the surveys were analyzed using the IBM package Reflex, which combines features of a spread sheet and database manager. Reflex does not offer built-in statistical tests; however, for the purpose of basic descriptive statistical computations, it can be quite powerful. With its cross-tabs view, Reflex can create frequency tables for single variables.

The findings from the questionnaires helped to prove many assumptions held by librarians in the section. Table 1 shows results of the status of users.

Juniors and seniors were by far the heaviest group of users, almost 56%, followed by master's students, doctoral students, and then freshmen and sophomores. The table also shows percentage of use by faculty, staff, and other, but since only six surveys were returned by faculty, four by staff, and 16 by patrons marking *other*, few conclusions can be drawn from these groups. It is valuable to know that so few faculty and staff use the systems, but this had been the impression of the librarians in the section.

Table 2 shows percentages of users by college. Overall, the heaviest group of users came from the College of Liberal Arts, followed by the College of Business Administration and then the College of Health and Human Development. At first it seemed strange that so many users came from the College of Liberal Arts, but this college is the second largest on campus encompassing over 35 majors and 10 minors. The second and third largest groups of users were no surprise, since the Colleges of Business Administration and Health and Human Development have several courses requiring library research. Students from these two colleges have traditionally used the library, and the Reference Section often works with these groups in bibliographic instruction sessions.

Table 3 shows the breakdown of users by both college and class status. Among the most frequent group of users, juniors and seniors, the largest percentage came from liberal arts followed by large percentages from business administration and health and human development.

TABLE 1
STATUS OF USERS AT PENN STATE

	Total %
Doctoral students	9.6
Faculty	1.1
Freshmen and sophomores	9.6
Juniors and seniors	55.7
Master's students	20.4
Staff	.7
Other	3.0

TABLE 2
STATUS OF USERS BY COLLEGE OR DEPARTMENT (TOTAL FOR BOTH SEMESTERS)

	Total %
Agriculture	1.7
Art	.8
College of Business Administration	21.1
Communications	9.7
Department of Undergraduate Studies	.9
Education	11.4
Earth and mineral sciences	.6
Engineering	2.6
Health and human development	15.7
Liberal arts	29.3
Science	1.6

TABLE 3
STATUS OF USERS BY CLASS AND COLLEGE

	Doctoral Students (%)	Master's Students (%)	Juniors and Seniors (%)	Freshmen and Sophomores (%)
Agriculture	0.0	0.4	0.7	0.6
Art	0.0	0.0	0.6	0.2
College of Business Administration	0.6	7.8	11.2	1.1
Communications	0.0	0.2	8.0	1.3
Division of Undergraduate Studies	0.0	0.0	0.0	0.9
Education	2.6	3.2	3.2	1.5
Earth and mineral science	0.0	0.0	0.4	0.2
Engineering	0.2	0.3	0.9	1.1
Health and human development	0.7	2.2	11.2	0.7
Liberal arts	5.0	4.7	17.9	1.3

Among master's students, the largest percentage came from business administration. This figure correlates with librarians' impressions and the fact that this college is growing in number and prestige. For doctoral students, only 10% of the total respondents, most users came from the Colleges of Liberal Arts and Education. For freshmen and sophomores, also only 10% of the total, users were spread out between business administration, communications, education, engineering, and liberal arts.

To date, no study of the user community in a busy university library reference area has been conducted.

None of these figures was too surprising, yet they do not reveal a complete picture. The Reference Section was also very interested in which CD-ROMs were the most popular. By observation and study of the sign-up sheets, the section had drawn conclusions about which systems were the most popular, and for the most part, the results of the survey verified these subjective impressions. Table 4 shows the most popular databases overall and by class.

Overall, the most popular databases were Readers' Guide, Social Sciences Index, and Business Periodicals Index. By class, doctoral and master's students used ERIC, PsycLIT, DAI, and the MLA Bibliography more than other groups; juniors and seniors favored all the business systems as well as Readers' Guide and Social Sciences Index; and freshmen and sophomores preferred Readers' Guide and Social Sciences Index. These figures offer few surprises as well. The Readers' Guide, Social Sciences Index, and Business Periodicals Index should be the most popular CD-ROMs in a humanities and social sciences reference area serving a large number of undergraduates. Furthermore, one would expect graduate students to use more sophisticated and research-oriented databases such as the MLA, DAI, or ERIC. Unsurprisingly, upper-level undergraduates favored the business systems. Besides the upper-level classes taught in the College of Business Administration itself, other departments offer courses in which students use these systems. Most notable are two difficult research courses in the hotel, restaurant, and institutional management program and business writing, one of four choices for a required writing course. Students generally enroll in these courses in their third or fourth years. Happily, the match

TABLE 4
MOST POPULAR CD-ROMS (OVERALL AND BY CLASS)

	RDG (%)	SSI (%)	BPI (%)	PSYC (%)	ERIC (%)	ABI (%)	COMP DISC (%)	HUM (%)	DAI (%)	MLA (%)
Overall	22.1	22.1	20.7	18.1	16.1	13.6	12.2	8.8	8.2	5.2
Doctoral students	2.0	7.9	3.9	49.0	33.3	5.9	3.9	7.8	17.6	15.7
Master's students	12.8	14.7	23.8	13.8	26.6	20.2	16.5	10.1	15.6	11.0
Juniors and seniors	25.5	27.5	25.5	14.4	8.0	14.4	13.7	9.1	4.4	27.2
Freshmen and sophomores	43.1	17.6	5.9	9.8	11.1	7.8	3.9	9.8	5.9	17.6

TABLE 5
USERS' REACTIONS TO INSTRUCTION SHEETS (OVERALL AND BY CLASS)

	Very Helpful (%)	Moderately Helpful (%)	Slightly Helpful (%)	Not at All Helpful (%)	Did Not Use (%)
Overall	38.7	38.5	12.3	1.1	8.6
Doctoral students	45.1	43.1	5.9	0.0	5.9
Master's students	39.5	38.5	11.0	.9	10.1
Juniors and seniors	38.6	36.6	13.1	.7	9.7
Freshmen and sophomores	33.3	43.1	19.6	2.0	2.0

between most popular databases and a patron's class status shows that users are at least making a wise choice about which databases may be most useful for their purposes.

Although patrons may initially choose a suitable CD-ROM for their needs, many will have questions. A series of questions on the survey (numbers 4–6 on the fall survey and numbers 5–7 on the spring survey) attempted to gather reactions about patrons' perceptions of the help available to them. Table 5 reveals users' reactions to the printed instruction sheets, overall and by class status.

Over 70% of the users found the instructions to be very or moderately helpful, and only slightly over 1% did not find the instructions useful. By class status, nearly all groups found the instruction sheets useful, with doctoral students and freshmen and sophomores registering the highest rate of satisfaction. While only 9% of all users did not use the instruction sheets, most of these tended to be either master's students or juniors and seniors. On the question of whether a patron asked a library employee for help, table 6 shows a nearly even split among those patrons who did or did not ask for help.

Graduate students asked for help more often than the undergraduate user. Knowing this, the Reference Section staff can try to make a more concerted effort

TABLE 6
USERS WHO ASKED FOR HELP

	Yes (%)	No (%)
Doctoral students	4.8	4.7
Master's students	10.8	9.3
Juniors and seniors	23.2	32.3
Freshmen and sophomores	3.0	1.9
Total	46.5	52.9

TABLE 7
TIME SEARCHES TOOK BY CLASS (TOTAL FOR SEMESTERS)

	Percentage			
	5–15 Minutes (%)	15–30 Minutes (%)	30–60 Minutes (%)	60+ Minutes (%)
Doctoral students	17.6	31.4	29.4	19.6
Master's students	15.6	45.9	24.8	11.9
Juniors and seniors	26.8	45.3	21.1	4.4
Freshmen and sophomores	29.4	45.1	19.6	3.9

to be visible and friendly to all CD-ROM users. This will perhaps increase the undergraduate user's willingness to ask questions of the library staff.

The final survey question relating to how patrons perceived the help available to them was, "Would you consider attending a fifty-minute instruction session on effective CD-ROM searching?" Fifty-six percent of survey respondents answered yes to this question. Pattee Library had been offering weekly fifty-minute sessions on effective use of BRS/After Dark, but these classes were generally difficult to teach as there was no way to predict how many people would show up or what subjects these patrons were researching. As CD-ROMs began to enter the library, the staff realized many patrons coming to the BRS classes also wanted to know about CD-ROMs. Beginning in the fall of 1990, the library began to offer on a less frequent basis subject specific classes in which a librarian discusses all aspects of database searching relevant to a specific group: CD-ROMs, BRS/After Dark, and librarian-mediated searches. These instruction sessions are promoted within specific colleges and departments in the hopes of attracting many participants. Librarians at Penn State also demonstrate CD-ROMs in bibliographic instruction (BI) sessions. Presently, the Penn State Libraries do not have sufficient staff to offer fifty-minute classes solely on CD-ROM searching; however, librarians have begun to look at various options for user instruction.

Related to the questions of help were questions concerning the nature of the patrons' searches. Again, a series of questions on the survey (numbers 7–10 in the fall survey and numbers 8–11 in the spring survey) were analyzed. Table 7 shows the results of how long patrons took to search.

The majority of users took between fifteen to thirty minutes to search. Undergraduates took less time to search than other groups, and doctoral students took more time to search. These results tend to verify other results in the survey, as doctoral students used databases that would demand more search time to learn and use, e.g., ERIC or the MLA Bibliography, and undergraduates searched easier systems designed to retrieve a few references quickly, e.g., Readers' Guide or Business Periodicals Index. Table 8 shows number of references retrieved.

For the spring semester, the question was reworded for clarity, and a fifth choice was added; thus, the results must be looked at for each semester. Many users did find over 20 references in the fall and over 50 references in the spring,

TABLE 8
NUMBER OF REFERENCES RETRIEVED (TOTAL FOR EACH SEMESTER)

	0–5	6–10	11–15	20+	
Fall	53	34	39	120	
	0–5	5–15	15–25	25–50	50+
Spring	41	46	49	44	65

and of these, most users thought between 26% to 50% of these references would be useful. Regarding whether users were satisfied with their results, 56% of respondents marked either 1 (very satisfied) or 2 on the Likert scale for this question on the survey. However, since many patrons would not immediately know which of their references might be useful, these results should be considered with caution. One could hope that patrons did feel satisfied with their results, but to determine how satisfied patrons are with CD-ROM results, a different survey would need to be designed and administered as patrons looked for and found the material retrieved from the CD-ROM systems.

The Reference Section also was interested to see if CD-ROM users were ignoring other sources of information.

The results from the remaining questions on the survey (numbers 11–13 for the fall and 12–14 for the spring) are as follows. Over 86% of users from both semesters found the systems easy to use; approximately 48% of users, mostly doctoral students, planned their searches in advance; and an overwhelming 97% said they would use the systems again. The results indicating that these new electronic products are easy to use may be viewed positively. However, librarians can never know how correctly patrons may be using these systems. The Reference Section staff was also pleased that nearly half of the respondents did try to do some preliminary planning of their searches, but many patrons still sit down at these systems with no prior thought or planning as to how they will proceed. The Reference Section and other sections within the Penn State Libraries are still investigating ways to help patrons think about and plan their searches. Users need to be made aware that many of these products are more sophisticated tools than print reference sources and that proper planning will save them time and frustration.

While the main purpose of this survey was to determine both the characteristics of CD-ROM users and how users were interacting with the systems, the Reference Section also was interested to see if CD-ROM users were ignoring other sources of information. The reference librarians realized the CD-ROM systems would not replace reference sources, but would rather enhance the fine collection of print and microform sources already in the section. The Pennsylvania State University is a major research institution, and the reference collection has been built over time with great care and attention to serve all types of patrons at such an institution. Knowing the appeal of computers, the section feared patrons might begin to use the new CD-ROM technology and ignore the multitude of other sources available to them.

While it is difficult to determine on a fifteen question survey whether patrons did use other sources, the author did attempt to construct a question that might indicate whether users were looking at other sources. In the fall, the question read, "Do you plan to use traditional print sources in your research?" Although almost 70% of users in the fall said yes to this question with another 3% answering maybe, the question may have confused respondents. Some respondents did not answer this question and one person wrote, "What does this mean?" Therefore, the question was reworded in the spring and read, "Have you used or do you plan to use other sources in your research?" Eighty-eight percent responded yes. While these numbers can be interpreted positively, they should still be looked at with some suspicion. However this question was worded, it is impossible to determine how respondents *read* the question. Traditional sources obviously mean one thing to librarians but may mean something quite different to users, and other sources also could mean a variety of things: textbooks, nonreference monographs, lectures, or information from a professor. Pretesting of this question as well as follow-up interviews with survey respondents would have provided a much clearer picture of patrons' use of all types of reference material. Nonetheless, librarians in the section continue to teach traditional reference sources in BI classes and to make users aware of the variety of sources, both print and electronic, that are available in the Reference Section and other areas of the Penn State University Libraries. And if a busy day in the section is any clue, it is clear that patrons continue to use print sources in abundance.

The majority of users took between 15 to 30 minutes to search. Undergraduates took less time to search than other groups, and doctoral students took more time to search.

As with many surveys, space was left for comments. The majority of patrons did not write comments, but of those who did most were interesting and insightful. Many comments were about the equipment: respondents wanted better printers, 3 1/4-inch disc drives, and faster systems. Most academic libraries with CD-ROMs cannot always afford the best equipment. In the Reference Section at Pattee, most systems run on IBM PC/XTs with Hewlett Packard ink jet printers. Patrons commented on other aspects of the systems the library cannot change: Wilson systems show only one citation at a time; subject headings or terms are difficult to discern; more online help and prompts are wanted; and abstracts are desired on systems such as the Social Sciences Index. Again, libraries owning CD-ROM products can make suggestions to vendors, but vendors differ in their willingness and capability to change products. Many comments, however, specifically related to conditions or procedures that could be investigated and altered if possible. By far, the most prevalent comment concerned a desire for duplicate systems, especially for ERIC and PsycLIT. Users also commented that the sign-up procedure for these two systems was unfair. A few people also mentioned that the instruction sheets were confusing, and others said that they would like to have seminars or workshops on using CD-ROMs. One comment noted a need for more staff.

These comments are quite valuable for the Reference Section as well as for other sections of the Penn State Libraries system. Several librarians are investigating ways to improve our service. Seminars to introduce the basics of online searching, including CD-ROMs, BRS/After Dark, Knowledge Index (which was just added in the spring of 1991), and librarian-mediated searches are now offered every semester for patrons of different disciplines. A CD-ROM users group has been meeting to work on improving instruction sheets and making sure all areas have uniform instructions. Recently a CD-ROM task force completed a set of recommendations for the improvement of CD-ROM acquisitions and services. The libraries' administration has listened attentively to such reports and does try to respond to requests for more equipment and staff.

CONCLUSION

Overall, the Penn State experience with CD-ROMs has been a positive one for both library staff and users. While user surveys can never tell the whole story of how patrons are responding to a library service, they can provide valuable ideas about what does and does not work. The Penn State Libraries introduced CD-ROM products in 1986, and the librarians who planned and continue to monitor these systems had several hunches about how users would react to this new technology. For the most part, the two surveys conducted in the General Reference Section of Pattee Library proved these hunches to be true.

As the Penn State University Libraries move into the 1990s, electronic sources will continue to flourish as they will at other academic libraries. Already Penn State has taken the initiative with several electronic services. The libraries are a test site for the Electronic Bulletin Board produced by the Department of Commerce. In the spring of 1991, the libraries added access to UnCover, a database of over 600,000 periodical citations produced by the Colorado Alliance of Research Libraries, CARL, and Knowledge Index, Dialog's version of BRS/After Dark. Dow Jones News Retrieval has been set up on a separate workstation in the CD-ROM area in General Reference. Plans are under way to allow access to remote databases and library catalogs through the Internet, and LIAS, Penn State's online catalog, will undergo a major upgrade in the fall of 1991 as Boolean and keyword searching are added. With this accomplished, commercial databases such as Medline will be mounted on LIAS with the help of grant money.

As these electronic systems continue to expand, many questions will arise about how to train and educate users on these systems. Many of the initial questions and hunches librarians had about users' reactions to CD-ROMs will be applicable. The Penn State Libraries will want to know who will be accessing all of these systems; how they will use the systems; what type of training these users will want; and what ideas these users have about improving service to the systems. While no one can predict the future of CD-ROM, the experience of CD-ROM users at Penn State has provided librarians here with valuable insight as to how users are responding to technology in the library. These experiences should also provide other academic libraries with answers and insight as we move into a decade of great change and challenge. The technology library is here, but our users' needs and desires must never be forgotten.

REFERENCES AND NOTES

1. See, for example, Nancy K. Herther, "CD-ROM [Compact Disc: Read Only Memory] Technology: A New Era for Information Storage and Retrieval?" *Online* 9:17–28 (Nov. 1985); David C. Miller, "Running with CD-ROM," *American Libraries* 17:754–6 (Nov. 1986); Christopher G. Pooley, "Silverplatter Brings CD-ROM to the Reference Desk," *Database* 9:40–42 (Aug. 1986); and Carol Tenopir, "Databases on CD-ROM," *Library Journal* 111:68–69 (Mar. 1, 1986).
2. Caroline Moore, "Survey of CD-ROM Users in the UK," *Program* 23:385–93 (Oct. 1989); Jenny Stocks, "CD-ROM Down Under: A Delphi Study of CD-ROM in Australian Academic and Special Libraries," *Laserdisk Professional* 3:18–22 (Jan. 1990).
3. See, for example, David Raitt and Ching-chih Chen, "Optical Products in European Libraries and Information Centres: Results of a Survey," in *Proceedings of the 13th International Online Information Meeting, London, December 12–14, 1989* (Oxford: Learned Information, 1989), p. 227–32; Raitt and Chen, "Use of Optical Products in Libraries and Information Centres in Western Europe," *The Electronic Library* 8:15–25 (Feb. 1990); Chen and Raitt, "Optical Products in American and European Libraries and Information Centers: Similarities, Differences, and Trends," *Microcomputers for Information Management* 7:1–23 (Mar. 1990); and Chen and Raitt, "How Optical Products Have Been Used in the U.S. and Western Europe," in *National Online Meeting Proceedings—1990, New York, May 1–3, 1990*, ed. Martha E. Williams (Medford, N.J.: Learned Information, 1990), p. 81–87.
4. Barbara A. Rapp and others, "Evaluating MEDLINE on CD-ROM: An Overview of Field Tests in Library and Clinical Settings," *Online Review* 14:172–86 (June 1990).
5. Anchalee Chamchuklin and Aung-Myint, "An Evaluation of CD-ROM MEDLINE Use in Thailand," *Bulletin of the Medical Library Association* 78:395–99; Beryl Glitz, "Testing the New Technology: MEDLINE on CD-ROM in an Academic Health Sciences Library," *Special Libraries* 79:28–33 (Winter 1988); Maureen Wong, Angella Lambrou, and Linda Ordogh, "A Survey on the Use of CD-ROM in Canadian Medical School Libraries," *Laserdisk Professional* 2:51–58 (Jan. 1989); Peter M. LePoer and Carol A. Mularski, "CD-ROM's Impact on Libraries and Users," *Laserdisk Professional* 2:39–45 (July 1989).

6. L. Scott Rawnsley, "A Laserdisk for Law Students—IAC's LegalTrac Database," *Database* 9:25–30 (Dec. 1986); John J. Welsh, "Evaluation of CD-ROM Use in a Government Research Library," *Laserdisk Professional* 2:55–61 (Nov. 1989).
7. Carolyn Pope, "An Evaluation of ERIC on CD-ROM in a College Library," *The Electronic Library* 7:94–97 (Apr. 1989); Jean Reese, "CD-ROM Technology at Vanderbilt University: Impact on Library Staff and the Educational Community," *Optical Information Systems* 9:38–43 (Jan.–Feb. 1989).
8. Sten Wiksten, "Learning the Hard Way: A Public Library's Experience with CD-ROM," *The Electronic Library* 8:107–9 (Apr. 1990).
9. See, for example, Beth Juhl and Anita Lowry, "The CD-ROM 'Revolution' at Columbia: Year One," *The Serials Librarian* 17:69–80 (1990); Patricia Lynn and Karen Bacsanyi, "CD-ROMs: Instructional Methods and User Reactions," *Reference Services Review* 17:17–25 (Summer 1989); Kim Schultz and Kristine Salomon, "End Users Respond to CD-ROM," *Library Journal* 115:56–57 (Feb. 1, 1990); Howard Silver, "Managing a CD-ROM Installation . . . a Case Study at Hahnemann University," *Online* 12:61–66 (March 1988); Ramona J. Steffey and Nikki Meyer, " Evaluating User Success and Satisfaction with CD-ROM," *Laserdisk Professional* 2:35–45 (Sept. 1989); and Terri Pedersen Summey, "CD-ROMs in the Library: User Evaluation of the Wilsondisc Indexes at Emporia State University," in *The Best for the Patron, Proceedings of the Research Forum, Academic Library Section, Mountain Plains Library Association: Joint Conference, Mountain Plains Library Association, Utah Library Association, May 2–5, 1990*, ed. Randy J. Olsen and Blaine H. Hall (Emporia, Kans.: Emporia State Univ., 1990), p.89–99.
10. See, for example, Anne-Marie Belanger and Sandra D. Hoffman, "Factors Related to Frequency of Use of CD-ROM: A Study of ERIC in an Academic Library," *College & Research Libraries* 51:153–62 (Mar. 1990); Marilyn M. Browning and Leslie M. Haas, "Is Business Periodicals Ondisc the Greatest Thing Since Sliced Bread?: A Cost Analysis and User Survey," *CD-ROM Professional* 4:37–41 (Jan. 1991); Somporn Puttapithakporn, "Interface Design and User Problems and Errors: A Case Study of Novice Searchers," *RQ* 30:195–203 (Winter 1990); and Linda Stewart and Jan Olsen, "Compact Disk Databases: Are They Good for Users?" *Online* 12:48–52 (May 1988).
11. See, for example, Gillian Allen, "Patron Response to Bibliographic Databases on CD-ROM," *RQ* 29:103–10 (Fall 1989); Douglas J. Ernest and Holley R. Lange, "INFOTRAC and WILSONDISC: A Comparison of New Technologies," *Reference Services Review* 17:67–75 (Summer 1989); Charles Forrest, Karen Chapman, and Joyce Wright, "Periodical Indexing Ondisc: A Comparative Analysis of InfoTrac Use in Three Illinois Libraries," *Reference Services Review* 17:85–92; and John G. Jaffe, "For Undergrads: InfoTrac MAGAZINE INDEX Plus or WILSONDISC with *Readers' Guide & Humanities Index*?" *American Libraries* 19:759–61 (Oct. 1988).
12. Carol Reese, "Manual Indexes Versus Computer-Aided Indexes: Comparing the *Readers' Guide to Periodical Literature* to InfoTrac II," *RQ* 27:384–89 (Spring 1988).
13. Gillian Allen, "CD-ROM Training: What Do the Patrons Want?," *RQ* 30:88–93 (Fall 1990); Gillian Allen, "Database Selection by Patrons Using CD-ROM," *College & Research Libraries* 51:69–75 (Jan. 1990).
14. Susan K. Charles and Katherine E. Clark, "Enhancing CD-ROM Searches with Online Updates: An Examination of End-User Needs, Strategies, and Problems," *College & Research Libraries* 51:321–28 (July 1990).
15. Bruce Bonta and Sally Kalin, "CD-ROM Implementation: A Reference Staff Takes Charge," *Reference Services Review* 17:7–11+ (Summer 1989).

The Process and Value of Self-Study in a Medium-sized University Library

William L. Beck and Marsha L. Nolf

This paper reports the steps taken to implement, personalize, develop, use, and evaluate a self-study process which follows a set of academic library standards suggested by Antoinette M. Kania. Included are organization and meeting strategies to determine and implement performance measures, qualitative and quantitative measures of the process, and specific recommendations. Ongoing results include improved communication, more effective strategic planning, the establishment of meaningful policies and procedures, and better use of library assets and services, all of which benefit the library employees as well as the patrons and university.

Future historians, looking back at higher education in the 1990s, may well call this the Age of Reports. What with program reviews; accreditation reviews; short-range and long-range planning documents; needs assessments; outcomes assessments; user surveys; needs surveys; automation projections; personnel analyses; national and professional compliance reports; accountability studies, etc., librarians (and everyone else in the academic world) complain that so much of their time is devoted to writing reports that they neglect the professional duties they are reporting. Besides, who in authority ever reads these reports, or, having read them, bothers to act upon them?

So, when the library staff of the Louis L. Manderino Library of California University of Pennsylvania heard in September 1987 that we *were required* by the State System of Higher Education's [SSHE] Board of Governors to conduct an exhaustive self-study (program review), our response was cynical. Was this really necessary? Would our report be read? What good would it do for our library? We already knew we were doing a "great job" because of recent increases in circulation, positive responses from users, and major tangible improvements.

As if the SSHE requirement weren't enough, we knew that similar self-analytical reports would soon be required by two other accrediting agencies: the Middle States Association of Colleges and Schools and the National Council for the Accreditation of Teacher Education. Not one report, but three. We accepted the challenge and, in the end, killed the three birds with one stone. The long, eighteen-month self-study process and ensuing final report provided much of the Manderino Library's portion of the required university report to each accrediting agency.

In this article, we describe what has happened to the Manderino Library staff since that challenge. The self-study program we have produced is more than just a survey, more than a summary full of charts and tables. It is full of the thoughts and contributions of each

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member of our library family. This comprehensive, introspective accumulation of all aspects of library operations cannot help but tell the truth about what we do and what we should be doing. We've already gone far beyond our original "assignments" and have used our findings to reorganize major and minor aspects of operations. We now have a structure that functions as a skeleton, as a customized model, as a check-and-balance system, and as a standard of comparison. Our method of self-study proved the value of using an excellently researched outline while allowing ourselves creative modifications as we recognized the need for them. Convinced that such a review can benefit the working organization of a medium-sized academic library, we want to share our experience so that others can use what might benefit them.

THE UNIVERSITY AND ITS LIBRARY

A few words about our university and library and the mandate for the study will help illustrate our starting point. California University of Pennsylvania (CUP) is a public, regional, state university in southwestern Pennsylvania, one of fourteen institutions that comprise Pennsylvania's State System of Higher Education. The school, nestled in the Monongahela River Valley, where steel, coal, and coke once ruled, has an enrollment of 6,748 students, with 290 faculty in the Colleges of Education and Human Services, Liberal Arts, Science and Technology, and the School of Graduate Studies and Research.

The chief mission of our medium-sized academic library is to support the curricular offerings of CUP and to provide services related to reference, interlibrary loan, online searching, and bibliographic instruction for students and faculty. As a vital part of the area's transition from heavy industry to scientific research and technology, our library is housed comfortably in a twelve-year-old building that accommodates a collection of 310,000 volumes, 1,700 periodical subscriptions, 63,000 audiovisual materials, and over 1.2 million microforms.

The Manderino Library is the largest library among those serving the universities in the State System of Higher Education. The library is a selective depository for Pennsylvania state documents and, since 1986, U.S. government documents. Circulation figures exceed 152,834 items per year, with the library being an interlibrary loan net lender by a factor of four to one. Our online catalog, using TEXTRIEVE software, is tied to an in-house online circulation system. We currently subscribe to nine indexes on CD-ROM.

The staff consists of a dean of library services, a systems analyst (at management level), ten professional librarians, fifteen clerical assistants, six full time equivalent graduate assistants, and eighty to one hundred student assistants. The 1990 budget was $1.7 million, with one-third of that allocated for materials and operating expenditures. Further, with unionized nine-month and twelve-month employees on staff, we must operate with due consideration to collective bargaining requirements and constraints. Having covered the what, why, and who of our story, we will now tell you *how* we did our self-study.

OUR "ASSIGNMENT" FROM SSHE

> "**Criteria for Review of Support Programs.** Universities should develop separate criteria for review of academic and student support programs. Such reviews should include some sort of qualitative feedback from users of the services provided by the program, cost-benefit data, and assessment of the unit's effectiveness in working with other areas of the university."[1]

Fortunately, two months after we received this assignment, the dean of library services and a librarian attended a workshop about self-study in academic libraries. They returned from Rutgers University with Antoinette Kania's excellent and appropriate model for "[encompassing] qualitative standards for accreditation purposes and [suggesting] quantitative performance measures for local self-evaluation purposes."[2]

SELF-STUDY BEGINS

In January 1988, all Manderino Library employees received copies of relevant materials and Kania's process. At two subsequent meetings, we explained the rationale and benefits of using Kania's structure to analyze what we do and how well we do it. We carefully emphasized that all library employees would share all the tasks of effecting change where necessary and that, ultimately, all of us would benefit. During open discussion, we determined that most were willing to give Kania's model, a model that had not yet been applied, a try. This need for open and complete communication is vital for any self-study effort.

Our library administrator knows his staff and is accustomed to dealing with them effectively within the confines of two separate collective bargaining agreements. Anticipating employees' fears, he carefully planned each innocent detail to minimize internal worries and to establish the prevailing group harmony. The result: about 80 percent of librarians and staff bought the concept during the initial planning stages.

This need for open and complete communication is vital for any self-study effort.

The dean also took care to balance membership of committees. He worked very hard to select people who were complementary in temperament, work ethic, abilities, and qualifications, while mixing new employees with veterans and extroverts with introverts. He talked with each employee separately about self-study, then spent several more weeks imagining worst-case scenarios and how to circumvent them.

At the third meeting, we formalized our structure. The entire staff was divided into four groups, each representing a mix of faculty and staff, public services and technical services, as explained in the paragraph above. Meeting separately, each group selected its leader and recorder, then listed and discussed the library's strengths, weaknesses, and problems. One hour later, the entire group reassembled, and each of the four recorders presented a report orally and on a blackboard. Then, the dean of library services offered his perceptions, and they were added to the board.

The overall viewpoint that emerged was the same as each group had determined separately. We were amazed to see that everyone had identified the same problems and situations. We already felt united and eager to go on with the self-study. The summarized reports of each group were typed and distributed to the entire staff. We cannot emphasize too strongly that the following points are crucial when this process is being undertaken in a collective bargaining environment:

1. All staff must be involved.
2. Recommendations must be implemented in an equal manner throughout the entire library system (i.e., not selectively).
3. Once the self-study process is completed, the report and strategic plan must be implemented, not shelved and ignored.
4. No one is to feel threatened in this process of examining everything. Communicate clearly that this process is not a cover-up for a secret agenda to eliminate or downgrade positions.

A STEERING COMMITTEE IS FORMED

Shortly thereafter, the dean appointed a steering committee consisting of three librarians, two support staff, a graduate student, and an undergraduate student.[3] Most of the committee members had been leaders or recorders in the joint meeting. The chairman was a bibliographic instruction librarian who had worked at Manderino Library for only one year. Among other qualities, she could contribute a fresh outlook and thirteen years as a head cataloger elsewhere. She was prepared to guide the self-study process with attention to both public and technical services viewpoints. Moreover, she was known for her exceptional organizational, interpersonal, and communications skills—which would result in a reliable management style to guide the self-study process.

The dean charged the Self-Study Steering Committee (SSC) to structure a process that would address the library's weaknesses and problems, assess the strengths, and develop a framework so that the study could involve all the staff. Almost immediately, the SSC decided to use Kania's model as our model for self-study.[4] The SSC met weekly during the spring semester in 1988.

Each SSC member researched one division of Kania's five-point outline: goals and objectives standards; collection standards; access/use standards; staff standards; and administration standards. Guided by Kania's standards and assuming the role of "investigative reporter," each SSC member asked and reasked questions until, as a group, we had talked to every person on the library staff. This method of cross-checking, examining, and confirming facts revealed some interesting things about current operations and library history. We learned that although our library excelled in many areas, we needed to examine some areas more closely and perhaps change them.

No one is to feel threatened in this process of examining everything. . . . This process is not a cover-up for a secret agenda to eliminate or downgrade positions.

Here is an example of how SSC members operated. Kania's outline includes the following collection standard: "While the institution *should* support its own essentially self-contained library, cooperative relationships with other libraries and agencies *may* also be developed to supplement the library's own resources."[5] The SSC member responsible for this area interviewed the interlibrary loan librarian and the public services coordinator. Supported by extensive documentation, the SSC member noted that our library participates in three major types of cooperative arrangements: interlibrary loan, reciprocal borrowing, and consortia efforts. This SSC member uncovered another example of resource sharing, the recent edition of *Access Pennsylvania* on CD-ROM. It was easy to determine that we fulfilled this standard.

A second SSC member investigated administration standards such as this one: "The library administrator(s) *must* have the appropriate authority and responsibility for the development and management of the library as well as the opportunity to participate in campus-wide planning and governance."[6] This was also easy to confirm after the SSC member interviewed the dean of library services and reviewed his job description and numerous extracurricular activities on campus.

Although committee members gathered their preliminary information within two months, complex library work schedules complicated the availability of common meeting times. To keep the project moving within the time constraints, the SSC made a preliminary report at the close of the spring semester. In a memorandum to the dean of library services, it recommended that Manderino Library use Kania's model as a basis for self-study, and that fourteen activities related to topics in that model be studied further by (new) subcommittees and individuals.

THE SSC MAKES FOURTEEN RECOMMENDATIONS

Among the fourteen recommendations, the SSC gave precedence to the standards we did not then fulfill. The use of italics and emphasis upon the verbs *must*, *should*, and *may* correspond to Kania's outline.[7]

1. "The library *must* develop and communicate goals and objectives for its own program that are compatible with those of the institution."[8] The library's general mission statement must be updated and rewritten in harmony with the newly revised university mission statement. A new library committee should be formed for this purpose.
2. "The development and review of the [aforementioned] goals and objectives *should* be conducted by the library staff working in concert with the administration, faculty,

and students."[9] After the new library mission statement is written and adopted, each department within the library *should* determine and write goals and objectives and decide how to achieve them. Annual review of these goals and objectives will help ascertain their status and value.

3. A "collection standards committee" *must* be formed, and it *must* immediately address the following standard: "The library collection *must* support the instructional program of the institution."[10] First, this committee *must* choose an appropriate measurement tool for evaluating and improving the vitality of our collection. Also, the collections standards committee *should* develop a means for increasing faculty involvement in the book and periodical selection process; reestablish a "representative faculty advisory committee"; and review/revise our materials-weeding policy.
4. The library *should* form a standing "advisory automation committee" to assist the systems analyst in planning for ongoing technological innovations in automated systems within the library.[11] The Public and Technical Services Departments *should* be adequately represented and *should* have input in determining goals and objectives for providing adequate, consistent, and integrated bibliographic access to audiovisual equipment, maps, pamphlets, the Special Collections Room, periodicals, archival materials, realia, and loose-leaf publications such as the *Readers Advisory Service*. This committee *should* disseminate information to the entire library staff, and when appropriate, suggest training and continuing education opportunities for the staff.
5. The library *must* form an ad hoc "serials committee" to study and analyze the library's current treatment of serial publications.[12] First, the committee *should* define this library's use of the term *serials*, then they *may* develop a flow chart of all aspects of serials procedures (acquisitions, cataloging, circulation, binding, etc.). Further, they *should* consider this library's need for a serials cataloger or librarian.
6. The Technical Services Department *should* develop a statement setting a time limit on items awaiting cataloging and classification.[13]
7. The Reference Department *should* develop a valid tool to determine whether the library is providing patrons with adequate assistance and accurate information. Currently, the Reference Department has quantitative data but no method to assess the *quality* of services. They *should* compare notes with the "library user survey committee" to avoid duplicating efforts.[14]
8. The library *should* form an ad hoc "media services committee." First, this committee *should* define the role of "media services" in our library, then assess how adequately our equipment serves faculty and students in their course-related work. The media services committee *should* also determine how well our audiovisual collection supports the instructional program of the university.[15]

   This committee *may* consider this guideline from Kania: "Depending on the organizational structure of the institution, the library *may* develop services other than those associated with traditional library functions, i.e., instructional materials, learning laboratories, etc."[16] This committee *may* wish to develop a flowchart of all aspects of media services procedures (from acquisitions to cataloging to circulation of audiovisual materials and equipment) for visual clarification and consolidation. Finally, this committee *may* also review Media Services' personnel needs.
9. The bibliographic instruction librarian *should* provide voluntary, in-service training for the library staff (such as library orientation for new employees).[17]

10. The library *should* form an ad hoc "library user survey committee." Extensive student and faculty surveys were conducted in 1979 and 1983; another campuswide poll of faculty and students would serve us well now. The ad hoc committee *should* begin to compile survey questions, determine how to distribute the survey, and be prepared to conduct it and study the results in the 1988 fall semester. The survey *should* focus on, but not be limited to: library hours, reference desk hours, analysis of library users, awareness and use of library services, and the types of services the library *should* provide.[18]
11. An ad hoc "communication committee" *should* be formed to encourage the improvement of library communication (in-house and campuswide). At the very first self-study meeting (with the entire staff), all agreed that lack of communication is a weakness that can undermine everyone's hard work. Good communication is a *must* for effective operations and cooperation among us.

    However, effective ongoing communication among individuals and groups can be difficult to achieve. Thus a most important task for this committee is to determine how to keep the channels open and working in everyone's mind. Already, many suggestions have been made. We *must* tell each other what we need to know, or our overall progress will be thwarted.[19]
12. An ad hoc "in-service training committee" *should* be formed to identify educational sources and programs of possible use and relevance to library staff members. However extensive our formal education, we all want to keep up to date with new information and technological innovations, and to know more about intralibrary operations. This committee would look at voluntary, in-service training both internally and externally. Teaching each other and learning together will help us become stronger, equal members of a team.[20]
13. The dean of library services *must* revise the library organization chart and communicate any revisions to the entire library staff. Perhaps an ad hoc committee (with adequate representation from the Public and Technical Services Departments) could be formed to assist the dean.[21]
14. The dean of library services *may* want to investigate the creation of a position of assistant to the dean of library services. The SSC came to this conclusion after interviewing the dean for over twenty hours about library policies, procedures, and history.

We were pleased to note that Manderino Library excelled in many of Kania's standards. However, we noted with some bemusement that we excelled primarily in the standards labelled *should* and *may*. Now that we could look at our overall performance objectively, we suddenly saw it in black and white: we were conscientiously doing most of the *shoulds* and all of the *mays*. We had unintentionally neglected many of the *musts*.

As for the *needs-to-improve* list, the dean agreed with the SSC's fourteen recommendations. Immediately, he and the SSC chair appointed nine specialized subcommittees to study specific topics and recommendations. The subcommittee titles are:

- The Goals and Objectives Subcommittee
- The Collection Standards Subcommittee
- The Automation Subcommittee
- The Serials Subcommittee
- The Media Services Subcommittee
- The User Survey Subcommittee
- The Communication Subcommittee
- The In-Service Training Subcommittee
- The Organization Chart Subcommittee

In addition, the public and technical services coordinators, bibliographic instruction librarian, and the dean of library services agreed to study the recommendations directed to them.

All of these subcommittees worked independently of the SSC and the dean of library services. To enforce our commitment to communication among ourselves, though, all subcommittees distributed copies of their minutes from meetings to the SSC chairman, the dean, and the staff lounge bulletin board. The subcommittees frequently sought advice or clarification of points from the SSC, and when requested, the SSC chairman attended a subcommittee meeting. When necessary, the dean prodded slow-moving subcommittees and individuals. Here are two examples of what happened when subcommittees' discussions were acted upon.

The results of the first example were most typical. The work of the Goals and Objectives Subcommittee led to fruitful action and the successful completion of decisions and plans. At the beginning of the self-study process, Manderino Library did not fulfill Kania's first standard to "develop and communicate goals and objectives for its own program that are compatible with those of the institution." The SSC determined that Manderino Library's previous written general mission statement was in need of revision, and this subcommittee rewrote it as follows:

> The mission of the Louis L. Manderino Library is to support the goals and objectives of California University of Pennsylvania through effective organization of materials and technological resources. The Library's role is to provide resources, instruction, and services to meet the educational, recreational, and research needs of faculty, students, alumni, and community patrons within the region.

This subcommittee also generated a list of six goals for Manderino Library. All were communicated to and approved by the entire library staff. The second example, fortunately, was one of a kind. The newly established In-Service Training Subcommittee had used a formal questionnaire to survey the wants and needs of all library staff members, especially concerning established and new uses for automated systems and related innovations. Replies reaffirmed that the majority did want ongoing programs for internal orientation and training as well as outside speakers to expand their horizons.

The In-Service Subcommittee developed these ideas and suggested other means of continuing education in the hope of creating a sense of unity of purpose and continued amiability among all library employees. In early 1989 and 1990, they sponsored two programs on stress management, a first-aid workshop, a presentation by the university's grants director, and a slide show about Malawi, Africa.

Unfortunately, enthusiasm ebbed quickly. Would-be participants dropped out, and several programs were poorly attended or canceled. Informal surveys indicated that perhaps the appeal of these voluntary continuing education sessions was not equal to the energy and time required or the disruption of established personal rituals, such as family plans. What had sounded interesting in discussion and on paper was ultimately rejected.

At this point, it should be evident to the reader that we took Kania's model and applied it to our own institution, making minor modifications as the need for them arose. It worked for us. We omitted none of Kania's points because we believed that all were necessary to comply with the various sets of requirements in outside evaluations we had to satisfy.

Moreover, we added weeks of cautionary planning to maximize the effectiveness of Kania's outline, and we added two conditions (*musts*) of our own: communication and training. In retrospect, we can see how essential communication was and still is. Fortunately, we had perceived that the process would not work unless we added crucial communication before and during all steps. Even as communication became excessive—and people complained of reading minutes—they worried if they missed something. We grew weary of telling everyone everything, yet found it addicting and beneficial. So many sets of different meeting minutes appeared on the staff bulletin board that other notices would not fit. Everyone was typing, making photocopies, and stuffing mailboxes. Eleven groups of people were producing and distributing different sets of minutes regularly.

Still, all that paper didn't mean that people actually read everything. Like most organizations, we suffered from the universal problem of getting people to read things. Oddly enough, during the self-study this problem almost disappeared. People were personally involved enough to stay curious about new developments as time went on. Peer pressure may have helped as well. Individuals could no longer use the excuse "I didn't know" because open, consistent, and overwhelming communiques appeared everywhere, and everyone knew it.

FINISHING TOUCHES

After all subcommittees and individuals had submitted their final reports to the SSC, the SSC chair wrote a 300-page progress report (with the necessary assistance of a word processor and a secretary). This progress report would later be reviewed by our external and internal consultants, whom the SSC chose during the fall 1988 semester. Agreeing to be our external consultant was the person whose research and self-study model had provided so much of our structure: Antoinette Kania. Our unanimous choice for internal consultant was JoAnn Nelson, a full professor in the Educational Studies Department at CUP, who also holds an M.L.S.

The self-study process forced us to conduct studies and surveys to analyze our performance, services, and interactions with clients.

Prior to spending two days in Manderino Library during the spring semester of 1989, each consultant had read the SSC's 300-page progress report. Both consultants' written reports were included as appendices in the final SSC report, which, at their suggestion, was greatly condensed to sixty-one pages. Both Kania and Nelson reaffirmed Manderino Library's many strengths and three major weaknesses (collection development, serials, and media services) that had already been identified by the SSC. We were pleased that the consultants found our self-study to be so productive and so precisely on target.

In her external consultation report, Kania suggested that we undertake a "review of the library's strategic plan in the light of [departmental objectives]." The dean agreed and asked that the SSC reconvene at the close of the self-study process to review the library's five-year strategic plan. Weary of months of self-examination, members of the SSC were not immediately receptive to this idea. In short, we did not wish to embrace the new burdens of strategic planning.

To help us rejuvenate and refocus ourselves, the dean suggested that we look at a book by Donald E. Riggs. In *Strategic Planning for Library Managers*, Riggs summarized where we had been and where we were now:

> Strategic planning begins with an objective analysis of the library's current strengths and weaknesses and how these weaknesses can be corrected. The appraisal must cover every functional area of the library. The results of this self-analysis can then provide a base for pursuing the strategic planning process.[22]

Back on track, the Self-Study Steering Committee found, to our surprise, that producing a new five-year strategic plan for the library was relatively effortless because of the logic and completeness of our self-study review. Quickly finishing this new task, the SSC recommended that the following objectives be included in the dean's next revision of Manderino Library's strategic plan. With his approval, the SSC further suggested that the appropriate library department, committee, or individuals provide activities, budget requirements, local criteria levels, and a time frame for the completion of these objectives.

Goal I: Collection Development and Evaluation

- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's book collection.
- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's serials collection.

- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's curriculum collection.
- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's U.S. government documents collection.
- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's Pennsylvania collection.
- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's pamphlet collection.
- To incorporate the aforementioned collection development procedures in the *Acquisitions Policy Manual*.
- To try, once again, to include more faculty in the collection development and evaluation process.
- To allocate funds for the organization and physical processing of archives and special collections.

Goal II: Library Services

- To establish a schedule for conducting library user and reference surveys, and performance studies.
- To suggest solutions for the problem areas highlighted by the library user survey, reference department survey, and performance studies; i.e., the library's hours, library noise and congestion, lack of awareness of certain library services by faculty and students (such as availability of typing rooms, telephone directories on microfiche, photocopiers, and audiovisual materials and equipment).
- To provide library orientation activities for new faculty; included in this objective should be the in-service training needs of faculty (old and new) in the use of automated retrieval systems.
- To develop and initiate a long-range plan for the evaluation of the quality and vitality of the library's reference collection.

Goal III: Library Automation

- To establish a standing advisory automation committee.
- To ask the aforementioned committee to develop a preventive maintenance plan for the library's computer hardware and software.
- To evaluate DIALOG services and CD-ROM indexes.
- To automate the serials circulation procedures.

Goal IV: Staff Development

- To develop a continuing program of systematic instruction and practice to aid in staff development.
- To encourage the improvement of library communication (in-house and campuswide).
- To request that all staff members participate in strategic planning at the departmental level.

Goal V: Media Services

- To develop and initiate a long-range plan for the evaluation of the library's audiovisual collection.
- To investigate further the library's media services. A good starting point might be the Media Services Subcommittee report requesting that the university look at the role of media services on campus.

THE IMMEDIATE RESULTS

From an administrative and managerial standpoint, the entire self-study process and its results have proven it one of the most worthwhile projects ever undertaken in the Manderino Library. We recognized the following points as immediate benefits:

1. **Meaningful Strategic Planning.** After such an in-depth analysis, we were certain of the strengths, weaknesses, and problems in our library system. As a result, strategic planning took on a new dimension, making the development of a five-year plan relevant and important to more of the library staff. Departmental and individual goals and objectives of the professional librarians have subsequently been tailored to act upon the SSC's final recommendations. For example, a newly formed automation advisory standing committee is already eval-

uating our existing automated systems as they work on a five-year plan for Manderino Library's future automation. Everyone now thinks of future directions instead of only the current semester.

2. **Improved Communication**. Because so many people were involved, had input, and received constant updates, they automatically knew most of what was happening as it happened. The process had an inherent check-and-balance system, and no one felt threatened. The self-study process and the revised strategic plan are still actively representing how well people are communicating, both within the library and between the library and other university departments. The final report was distributed widely, thus becoming a good public relations tool as well as a source of information about the library and its programs. Internally, employees have a better understanding of the various jobs and duties of all staff members.
3. **Orderly Collection Evaluation and Development**. The entire process of evaluating and building the library's collection of both monographs and serials has been fine-tuned. A committee of library faculty, library staff, and teaching faculty members has implemented an effective means of addressing and eliminating deficiencies. Also, the committee will enhance the collection over the next three years, earmarking a part of the materials budget specifically for this project.

   The committee is reviewing *Books for College Libraries 3*; recommending bibliographies, and outstanding books and serials lists by discipline; analyzing circulation and usage factors of materials presently owned by the library; and formulating the plan to address the outcomes of this process.

   The collection evaluation project is being handled by individual colleges. The College of Science and Technology completed the process in 1989–90, and the College of Education and Human Services is currently working on its portion.
4. **Improved Budgetary Allocations.** Having our reviews and plans documented in such detail has made it easier to justify to the university administration increases and shifts in the total library budget. Eighteen months of research, qualitative details, and quantitative data in widely read reports have made presentations to the university president and the cabinet more credible than usual. Our specific requests for money to support specific self-study recommendations are much easier to justify by referring to data than by simply claiming "the library needs more money." In 1990–91, we received a 10 percent increase in the library's budget allocation over 1989–90.
5. **Useful Assessments of Library Resources**. The Kania model and the self-study process forced us to conduct studies and surveys to analyze our performance, services, and interactions with clients. Some previous informal assessments about our effectiveness were certainly supported, and we now had clearer ideas about specific areas that would benefit from changes. For example, more than 90 percent of faculty and students who evaluated the reference librarians' services were more than satisfied with the quality and depth of the library's public services. Those surveyed also offered several suggestions for improvements.
6. **Compliance with ALA Standards.** As we followed Kania's model, and afterward, it was easy to determine whether or not our library complied with the 1986 *Standards for College Libraries*. We now had documentation to conduct an objective assessment of the application of performance and usage criteria that were so crucial to regional accreditation standards. The outcome

of our assessments matched those of our consultants. Anyone who cared to review the data would find no hidden secrets, self-congratulatory conclusions, or misjudgments. Other university constituencies can easily understand how well we meet some of the standards' criteria and how we plan to achieve others.

7. **Enhanced Atmosphere and Timing for Change.** It is like spring cleaning and garage sales. After you have decided to do one, the other one follows, and before you can think about procrastinating, you have done both, and you feel better. The endless interviews, research, and examinations that are inseparable from self-study open the way for redesigns, changes, additions, deletions, and improvements. Individuals directly involved with these changes are already participating in the entire self-study process. Sometimes it is *their* idea to "go ahead and do this while we're at it." Or sometimes, the need for an additional employee changes from a perceived fantasy to an absolute reality; as supporting reasons accumulate, you wonder how you could have ever managed without this much-needed person.

   For example, one of the major recommendations as a result of the self-study was to consolidate everything pertaining to serials within one department and hire a serials librarian. Our new serials librarian joined us six months after the self-study process ended. This change was natural; it was made as part of a total project and not done in isolation.

8. **Total Staff Involvement.** All twenty-eight members of the library staff participated in the self-study in some way or another. This is crucial in achieving positive outcomes. Everyone stated his or her opinions, and could complain and be heard. In many cases, individuals who had not previously interacted formally got a chance to do so, and we all benefited from the equality. This concept may sound a bit elementary, but it is a factor not to be overlooked in organizational group dynamics or library politics. It was important and rewarding in our case, especially in our relationship to organized labor.

What evolved into a policy of "communication without irritation" required attention to as well as honest, open acceptance of each person's contribution and each detail of each meeting. As a balance to this civility, within the groups people were encouraged to vent frustrations. Complaints usually began, "He's driving me crazy!" or "I can't stand the way she does this!" The group then provided suggestions to solve the day-to-day problems and restore harmony to the project.

The endless interviews, research, and examinations that are inseparable from self-study open the way for redesigns, changes, additions, deletions, and improvements.

In all cases, all such decisions were made openly and aboveboard. Most people learned quickly that everything would be handled fairly, no matter who was involved, and they gained confidence as they saw that all contributions had an equal chance, no matter who offered them. As a last resort, the decision moved up the chain of command to the dean, who acted from an administrative viewpoint.

The cooperation and outstanding efforts of the entire faculty and staff continue to be absolutely essential to our success. They took on the self-study process as part of, and in addition to, their respective job assignments with no release given, or expected. The entire study was accomplished with no reduction of library services.

CONCLUSION

The dean of library services and the chairman of the SSC (the authors of this article) have become firm believers in a process about which we were initially very skeptical. We thought it would take a great deal of work and a good deal of time, and it did. We were worried that all of our painstaking effort would be put on a shelf and never read. We were certainly wrong about that.

We were rewarded with unexpected praise and recognition. Beyond the list of benefits previously noted, we received a glowing evaluation, both written and verbal, from SSHE. The California University of Pennsylvania administrators praised our program and the value of the ongoing results to the university. Kania was very pleased to see how well our manifestation of her published model worked. We were asked to talk about our self-study program at an ACRL regional meeting, and after our presentations over half the audience requested copies of our final report.[23]

A WORD TO THE SKEPTICAL

Did the Manderino Library really do what is described in this article? Yes, it did, and overall it was a positive experience. Because a few colleagues who work at other libraries expressed doubts about the degree of our success, we have reexamined factors in our process to pinpoint why we neither failed nor achieved only mediocre success. We discovered several things: existing conditions at other institutions that would predestine failure and certain established conditions and practices at CUP that were (and are) pivotal to our success.

One colleague said, "This would never work at my library. We lack support from university administrators, including inadequate funds and staffing." Another complained that his school had weak library management, complemented by lazy employees. "I don't know how we would get them to do any of the self-study tasks. No one knows what's going on at the different job levels, and everyone's always suspicious of being given more work without more pay. It's us against them."

At CUP, credit must go to positive preexisting conditions, an excellent library administration, and communication. Our university is proud of our library; people throughout the system support us. Did we have problems? Yes, we did, and we dealt with them—immediately. Problems included passive/aggressive behavior, union worries, long-term illness and recovery, missed deadlines, and just plain dead ends.

We recognize that we were well prepared to take on the self-study process in ways that other libraries may not be. Because our employees are unionized, we had to get the most value from them in accordance with their defined job positions. By definition, we simply could not infringe upon their established job responsibilities. While our employees needed to feel comfortable, interested, and unstressed, all of them had an important role in the self-study process.

The self-study process and its results have proven it one of the most worthwhile projects ever undertaken in the Manderino Library.

We now realize how well the demands of our self-study process blended with the Manderino Library's established work environment. Life went on. The reference librarian still had to work a full schedule, while squeezing in frequent meetings of the Communications Committee and the SSC. As recording secretary of the SSC, she took detailed notes, and then quickly edited, wrote, and produced minutes that were immediately distributed to all library employees. In less than a day, everyone knew everything that had just been discussed. And throughout that day, questions that continued to pour into the reference desk were answered satisfactorily.

It is important to remember that university libraries differ greatly. Other institutions (especially those without unions) may be more unstructured, more spontaneous. Situations there may be handled as they occur, in a variety of ways, rather than in strict accordance with a collective bargaining agreement. Some administrators may rule more autocratically and be unfamiliar with the needs and concerns of their staff. If this is the case, we strongly recommend that this type of environment be modified before attempting our example of self-study process. We found that a "give and take" attitude among all participants and the same kind of management style were basic to our process.

Although "we" wrote this article, the spirit behind the "we" encompasses all of us at Manderino Library. We are still in it together. The self-study process was not a wasted academic exercise but the basis for a motivational document that has continued to produce growth and changes at Manderino Library. People quote from the report daily. "Why should we do this?" "This is a '*must*'." "Oh . . . right. No problem." No more need be said.

REFERENCES AND NOTES

1. State System of Higher Education, "Academic Policies," a policy statement from the chancellor's office of SSHE, 1989, p.[6–7] [actually unpaged].
2. Antoinette M. Kania, "Academic Library Standards and Performance Measures," *College & Research Libraries* 49:16–23 (Jan. 1988). This is how one library adapted an outline to suit a necessary self-study program. It is an application, and this article is not intended as a critical evaluation of Kania's model.
3. Placing students on the steering committee was a good idea that unfortunately did not work out. Students were busy with classes and studying; it was difficult for them to attend meetings. Their participation was voluntary and brought no monetary reward.
4. Kania, "Academic Library Standards," p.22–23.
5. Ibid., p.22.
6. Ibid., p.23.
7. Kania writes: "The primary standards are those statements that utilize the verb *must* to indicate that the achievement of these standards . . . ought to be considered mandatory for academic library regional accreditation. . . . [Secondary standards] utilize either the verb *should* to indicate a professional obligation to achieve, or *may* to indicate that achievement is optional and, therefore, only advisable." Ibid., p.22.
8. Ibid.
9. Ibid.
10. Ibid.
11. Ibid.
12. Ibid.
13. Ibid.
14. Ibid., p.23.
15. Ibid., p.22.
16. Ibid., p.23.
17. Ibid., p.22.
18. Ibid., p.23.
19. Kania did not cite ongoing communication as a specific, individual activity. We added it to her outline under *IV. Staff Standards*. Ibid.
20. Kania, "Academic Library Standards," p.23.
21. Ibid.
22. Donald E. Riggs, *Strategic Planning for Library Managers* (Phoenix, Ariz.: Oryx, 1984), p.20.
23. Presentation occurred at the Delaware Valley Chapter ACRL fall program, Nov. 2, 1990 (Philadelphia). This sixty-one-page spiral-bound report, Marsha L. Nolf, "Louis L. Manderino Library Self-Study Final Report," May 19, 1989 (California, Pa.: California University of Pennsylvania), is available to readers free of charge. Send $4.00 to cover photocopying and postage to Marsha L. Nolf, Manderino Library, California University of Pennsylvania, California, PA 15419.

Selected Reference Books of 1990–91

Eileen McIlvaine

This article follows the pattern set by the semiannual series initiated by the late Constance M. Winchell more than thirty years ago and continued by Eugene P. Sheehy. Since the purpose of the list is to present a selection of recent scholarly and general works of interest to reference workers in university libraries, it does not pretend to be either well balanced or comprehensive. A brief roundup of new editions of standard works is provided at the end of the article. Code numbers (such as AD540, CJ331) have been used to refer to titles in *Guide to Reference Books*, 10th ed. (Chicago: American Library Assn., 1986).

RARE BOOKS AND INCUNABULA

Harvard University Library. *A Catalogue of the Fifteenth-Century Printed Books in the Harvard University Library*. Comp. by James E. Walsh. Binghamton, N.Y.: Center for Medieval and Early Renaissance Studies, SUNY at Binghamton, 1991. v.1 (in progress). (Medieval & Renaissance Texts & Studies, 84.) LC 90-6658.

Contents: v.1, Books Printed in Germany, German-Speaking Switzerland, and Austria-Hungary. 617p. $32 (ISBN 0-86698-096-2).

Combing all the libraries under Harvard's aegis, including Dumbarton Oaks in Washington and Villa I Tatti in Florence, James Walsh has identified 1,281 incunabula printed in Germany, German-speaking Switzerland and Austria-Hungary. The arrangement follows Proctor (AA275), that is, chronological by date published under the name of the city. Each entry includes the author and transcribed title, format, number of leaves and foliation, leaf measurement in millimeters, copy specific variations, date and source of acquisition, and reference to other lists. There are concordances for Hain, Proctor, the *Gesamtkatalog* and Goff numbers (AA269-AA273, AA275, AA279-AA280, AA278 respectively). Indexes include authors and anonymous titles, editors, translators, contributors, printers and places, provenance, identified bindings, and significant manuscript insertions.—E.Mc.

BIOGRAPHY

Black Biography 1790–1950: A Cumulative Index. Alexandria, Va.: Chadwyck-Healey, 1991. 3v. $900 (ISBN 0-89887-085-2). LC 91-254.

The monumental *Black Biographical Dictionaries 1790–1950* (Chadwyck-Healey, 1987. 1068 fiche) reproduces some 31,000 biographies found in 297 biographical sources published before 1950. The compilers have excluded individual biographies and autobiographies but have included all collected biographies that could be located as well as "separately published books or pamphlets, whether histories, handbooks, yearbooks . . . that have an identifiable chapter, section, or appendix devoted to collective biographies" (Introd.). The microfiche reproduces the sources, numbered 1–197, in alphabetical order by compiler so that it is well-nigh impossible to use without the index.

The index is arranged alphabetically by biography, providing dates, if known,

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occupations, illustrations, if any, and references to the microfiche set by the number assigned. The key to the numbers, the handlist of titles which accompanies the microfiche set, is reproduced at the beginning of v. 3 of the index.

The index itself has indexes by place of birth, by occupation, by religion, and of women. The occupations are determinedly nonsexist—business person, military person, etc.—which can cause confusion. Is a female medical worker a nurse? And since doctors are usually identified as such, why is there no separate listing for them?

This set belongs in every research library, and any library answering questions on black biography should at least have access to this impressive achievement.—M.C.

RELIGION

Encyclopedia of Early Christianity. Ed. by Everett Ferguson. New York: Garland, 1990. 983p. $95 (ISBN 0-8240-5745-7). LC 89-36997.

This encyclopedia provides a one-volume guide to the history of the Christian Church from the time of Christ roughly to the end of the sixth century. Containing a total of 977 articles by 135 contributors, it surveys a wide array of persons, texts, places, councils, doctrinal issues, heresies, and a host of related cultural and historical problems. Given the existence of so many encyclopedias and dictionaries of the Bible, however, strictly biblical material is discussed primarily in terms of its postbiblical development. Some attempt is also made to document the major figures, institutions, and publications involved in the study of this period. To be sure, there are some surprising lacunae: one searches in vain, for example, for any article on the Dead Sea Scrolls, the Essenes, Talmudic literature as a source on early Christianity, or Rudolf Bultmann. Nonetheless, overall coverage appears to be quite comprehensive.

Each article attempts to provide a brief overview of the background, development, significance, and current scholarship on its subject as well as bibliographic citations to key source publications and scholarly literature. The entries range from a paragraph or two to a few pages in length. A detailed subject index at the end of the volume provides additional access to the material. One feature that the nonspecialist reader, for whom this work is chiefly designed, may find confusing at first (since the explanatory note is buried in the introduction) is the practice of providing citations to patristic literature in the text by use of the often very laconic abbreviations employed by the *Clavis Patrum Latinorum* (BB309), *Clavis Patrum Graecorum* (BB311), and *Thesaurus Linguae Graecae*.

As noted, this is primarily a work for the nonspecialist, and it makes no attempt to supplant the many longer, more comprehensive or more detailed reference tools that already exist. (A list of some of these is provided at the end of the introduction to the book.) As such, the encyclopedia would seem to have a place in most general history and humanities reference collections. At the same time, as the editors suggest, its conciseness, currency, and offering of ready access to the major issues and key bibliographies may well make it of interest to specialists as well, particularly as an addition to a personal library.—R.H.S.

LITERATURE

Letteratura Italiana. Gli autori: dizionario bio-bibliografico e indici. Ed. by Giorgio Inglese et al. Torino, Einaudi, 1990–91. 2v. (1864p.) L110,000 each volume (ISBN 8806115030, 8806115049). LC 91-131315.

This bio-bibliographical dictionary completes the *Letteratura Italiana*, directed by Alberto A. Rosa, which started in 1982 and now comprises twelve volumes covering "writing" in Italy from the late fifth century to the present. Much emphasis is placed on studying literature in its historical and social contexts with practically every school of critical approach covered. The series is a most comprehensive treatment of literature from sermons and orations, scientific communications, and historiography to novels and drama.

The two final volumes, *Gli autori*, serve as a general index to the entire series with extensive cross references to previous volumes under each entry. The entries, totaling 7,500 items, address literary authors but also historians, critics, scholars, journalists, bearers of oral tradition, copyists, printers, publishers, book collectors, anonymous works under their titles, literary and cultural periodicals, academies (p. 7–13), libraries (p. 273–84), and cultural institutions. Each signed entry gives biographical details and is accompanied by a bibliography containing archival sources, works by and about the subject, along with the above-mentioned cross references.—J.S.

Literary Exile in the Twentieth Century: An Analysis and Biographical Dictionary. Ed. by Martin Tucker. Westport, Conn.: Greenwood, 1991. 854p. $99.50 (ISBN 0-313-23870-7). LC 89-25920.

In the preface to this volume, the editor defines literary exiles as including "writers who have suffered the experience of banishment, deportation, voluntary departure (with varying degrees of hope and/or expectation of return), flight from possible imprisonment or torture, or flight from incarceration for reasons of expression of belief." With entries for 550 writers from nearly every country, it includes all the writers one could expect to find (Jerzy Kosinski, Bessie Head, Elie Wiesel, Salman Rushdie) and many others (Susan Sontag, Noel Coward, Sam Shepard, Octavio Paz). Well-written entries, addressing themes of exile and alienation, are followed by brief bibliographies of secondary materials. Appendixes list major events that resulted in emigration and exile; writers by point of departure and point of arrival; and writers by type of exile (e.g., cultural, legal, political, etc.). The volume is indexed by person.—S.S.

ARCHITECTURE

Teague, Edward H. *World Architecture Index: A Guide to Illustrations.* Westport, Conn.: Greenwood, 1991. 447p. Art Reference Collection 12. $65 (ISBN 0-313-22552-4). LC 91-7565.

The *World Architecture Index* "is a reference tool for finding images of approximately 7,200 architectural works reproduced in more than 100 books likely to be available in libraries with architectural collections. The index is international in coverage, includes a variety of architectural, engineering, and planning works, and covers most historical periods and styles. Citations to reproductions of exterior and interior views, plans, sections, and elevations are provided, and access is enabled by index to building site, architect, type of work, and name of work" (p.ix).

The arrangement of the volume is in four sections. The first, the site index, forms the main body of the index and provides full information for locating reproductions. Entries are listed alphabetically by city or site and country and give the architect(s), if known, date of the work, the type of illustration, and reference to a book identified by a three-letter code (explained at the beginning of the volume). Part II, the architect index, lists architects, their dates, and their works and locations for reference back to the site index. Part III, the type index, refers to building types. Cross-references from unused forms of entry to building types used are provided within this index as well as in the site index (e.g., Agoras, *see* Open Spaces). Finally, a work index lists individually built works followed by location, again for referral back to the site index.

This is a useful tool for locating images of many important works of architecture. This reviewer hopes that further work will supplement this initial collection with many more published sources containing hundreds more architectural masterpieces not included here.—B.S.-A.

CITY PLANNING

Venturi, Marco. *Town Planning Glossary: 10,000 Multilingual Terms in One Alphabet for European Town Planners/Stadtplanungsglosar/Glossaire d'Urbanisme/Glosario de urbanismo/Glossario di urbanistica.* Munich: K. G. Saur; Venice: Arsenale, 1990. 277p. $56 (ISBN 3-598-10903-2).

This work is intended primarily for the use of professional planners, but can be useful for graduate students in urban planning, political science, sociology, and other related fields who must work with literature in several European languages. As stated in the subtitle, it includes 10,000 multilingual terms in a single alphabet (i.e., 2,000 terms x five languages: English, German, French, Spanish, and Italian) commonly used by town planners, principally those who are preparing for the European economic integration in 1992.

Since the intended audience is already working in the field, "definitions of the terms used were deemed unnecessary, insofar as they are presumably already known to the users . . ." (p.v). This decision, while perhaps more efficient from an editorial standpoint, renders the work less useful in one of several respects than *Elsevier's Dictionary of Physical Planning in Six Languages* (English, French, Italian, Dutch, German, and Swedish), compiled by Gordon Logie in 1989 (New York: Elsevier Science Pub., 1989. 468 p.). Logie's work may be preferable for academic libraries not only for having more languages and definitions where needed but also because it has more terms: 3,565 English-language terms and phrases are listed alphabetically with the foreign equivalents identified under each entry, giving a total of over 17,000 items. Each language is identified by an initial code placed next to the foreign term. In Venturi's glossary these are presented sequentially in varied typeface without the languages being identified. *Elsevier's Dictionary* then provides separate indexes for the foreign terms with reference back to the numbered English entries, a method Venturi considers tedious (p.v).

Both titles are comparable in the scope of subjects included in planning, an interdisciplinary field concerned with housing, transportation, urban design, economics, the environment, population, land use, public policy, building and construction, architecture, etc. The greater number of entries and the inclusion of some idiomatic expressions give *Elsevier's Dictionary* the edge here too, although Venturi's stated purpose was "not . . . to be a complete guide to terms in the discipline but rather to cover the cross-currents between specific forms of knowledge and operational areas." These are intended in the future to "be built on by creating customized supplements to specific sectors . . ." (p.v). Here again, Logie's earlier work for Elsevier, a series of five international planning glossaries published between 1978 and 1986 in the same six languages as the *Dictionary*, may already provide adequate coverage of existing terminology. The five Elsevier glossaries are *Glossary of Population and Housing* (CG36), *Glossary of Transport* (CH444), *Glossary of Employment and Industry* (CH708), *Glossary of Land Resources* (CL78), and *Glossary of Planning and Development* (1986, volume 5 in the series).

As new planning practices and theories come into existence, however, continued efforts to understand and communicate differing cross-cultural and multinational approaches to urbanization and the built environment will be welcome and needed.—B.S.-A.

WOMEN'S STUDIES

Cole, Helena. *The History of Women in Germany from Medieval Times to the Present: Bibliography of English-Language Publications*. Washington, D.C.: German Historical Institute, 1990. 102p. (Reference Guides of the German Historical Institute, 3.) $5. LC 91-209584.

This small, inexpensive book may be the reference bargain of the year. Compiled by the German Women's History Study Group, it is a classified list of books, articles, and essays (unfortunately no dissertations are included) discussing all aspects—religious, cultural, political, and social—of German women's history. "All German-speaking areas are included until 1871, after which we took Germany as it was defined by its political borders. However, works on Austria are included until 1918 if they focus specifically on women. Neither Switzerland nor the Low Countries is covered" (Introd.).

The classification scheme is quite detailed and the sources wide-ranging. I was recently asked for information about German women's war work in the First World War, and a quick glance through the table of contents showed a chapter on World War I, which included articles on war work from two 1917 issues of the *New York Times Magazine* and one from a 1920 *Monthly Labor Review*, none of which is listed in *Women in Western European History* (CC561).

No reference work is perfect, and this one has no entries under individual names. Someone looking for sources on Rosa Luxemburg must scan several pages of entries of the section on "Politics and Law" for the period 1870–1918, and several more pages for biographies from the same period. While a subject index would have solved this problem, this is a valuable addition to any collection supporting European history and/or women's studies.—M.C.

Feminist Legal Literature: A Selective Annotated Bibliography. Comp. by F. C. DeCoste, K. M. Munro, and Lillian MacPherson. New York: Garland, 1991. 499p. (Garland Reference Library of Social Science, 671) $65 (ISBN 0-824071174). LC 91-9731.

Listing multidisciplinary journal articles dealing with legal issues of interest to feminists, this selective bibliography is not intended as a comprehensive list of legal literature regarding women and women's issues relevant to law. Instead, articles chosen for inclusion are written from a feminist perspective. Within these parameters, the compilers have concentrated on legal periodicals, alternative press publications, international human rights literature, and social sciences journals, generally from the 1980s. Most articles are in English, but French-language materials published in relevant French-Canadian publications are included.

The work is divided into broad chapters on such topics as "Abortion and Reproduction," "Family Laws," "Feminist Theory," and "First Nations and Race." Some of these broad topics are further subdivided within the chapters. The separate chapters on book reviews and bibliographies are the only entries for monographs. Although most entries have clear, concise annotations, the short chapters on bibliographies and symposia are unannotated; at least some of the individual articles in symposia do appear in the annotated topical chapters. Entries that could be listed in two or more categories are listed in each but fully annotated only in one.

Three indexes (personal/corporate name, periodical title, topical) provide additional access points. Unfortunately, weaknesses exist in this area of the book. There seem to be a few errors in the indexing itself, such as incomplete pagination. Headings are still very broad. Finer subject headings and the inclusion of geographical terms would have allowed users to pinpoint more accurately those articles relevant to their needs. References in the index are to page numbers alone. This practice means that the user must search each entry on the page in order to identify relevant items.

Overall, this work will be a valuable addition to any women's studies or legal collection, but its value would have been enhanced by more careful and complete indexing.—B.E.K.

Zuckerman, Mary Ellen. *Sources on the History of Women's Magazines, 1792–1960: An Annotated Bibliography*. Westport, Conn.: Greenwood, 1991. 297p. (Bibliographies and Indexes in Women's Studies, 12) $49.95 (ISBN 0-313-26378-7). LC 91-12151.

This comprehensive critical bibliography focuses on the history of popular American women's magazines, with chapters addressing women's magazines in general; the portrayal of women in the media; studies of content in women's magazines; the individuals working for women's magazines; advertising and ad agencies; surveys, marketing research reports, and promotional materials; the business of women's magazines; and selected archives and manuscript collections. Ten major magazines (*Ladies' Home Journal*, *Woman's Day*, *McCalls*, etc.) are treated individually, but the best way to find material on specific periodicals is to use the subject index. For the most part, the periodical publications of societies and organizations have been excluded, although some "entries dealing with more specialized journals, such as suffrage publications, appear primarily when they shed light on or provide contrast to the more mainstream publications"(Introd.). The book is indexed by author and subject.—S.S.

POLITICAL SCIENCE

The Columbia Dictionary of Political Biography. New York: Columbia Univ. Pr.; London: Economist Books, 1991. 335p. $40 (ISBN 0-231-07586-3). LC 90-24439.

A compact and useful guide, this biographical dictionary provides ready access to information on several hundred individuals currently active on the world political scene, and as such promises to be useful to any library seeking to provide coverage of international affairs and current events. Researched and compiled for The Economist Books Ltd. by the Cambridge International Reference on Current Affairs, it is published in the United States by Columbia University Press. Included are heads of state and governments, ministers, legislators, prominent regional administrators, and other local government figures, trade unionists, leaders of major professional or nongovernmental organizations, lobbyists, and influential figures of other types.

The biographies are arranged alphabetically and, at the end of the book, the names are listed by country. Each brief sketch provides an overview of the individual's background and career as well as an attempt to characterize his or her accomplishments and point of view and to assess his or her place on the current political scene, thus providing more analysis and less of a detailed listing of facts than is found in the who's who type of biographical directory. No listing of sources or other bibliographical information is provided, however.

The work does an admirable job of representing all countries. Not too surprisingly, however, it emphasizes Europe and North America, with fullest coverage provided for the United States (241 biographies) and the United Kingdom (166), followed by the former Soviet Union (117), and France (112). It offers markedly less coverage of Germany (77) and Japan (46), to say nothing of such major Third World powers as China (35), Mexico (12), Egypt (10), or Brazil (11). It does, however, do a better job than any other single volume this reviewer has seen to date in keeping reasonably abreast of the ever-changing political actors of contemporary Eastern Europe.

The dictionary is quite current in its coverage, seeking, as it does, to document political leaders alive and active as of December 31, 1990, and updating that with a "Stop Press" chronology at the beginning of the volume. Indeed, continuing to maintain that currency will surely be the ultimate test of this reference work. It appears that the editors do anticipate the production of updated versions, but it is not clear just how regular the appearance of subsequent editions is likely to be.—R.H.S.

Encyclopedia of the Second World. Edited by George Thomas Kurian. New York: Facts On File, [1991]. 614p. $145 (ISBN 0-18160-1232-6). LC 90-40370.

This volume completes the series begun by Facts On File with its earlier encyclopedias of the First and Third Worlds, and those libraries that have already acquired those two titles will no doubt want this one as well to ensure comprehensiveness. As its title suggests, it provides coverage of what could have been described, until recently, as the Communist countries of the world, including the former Soviet Union, Eastern European Communist states, Mongolia, and the People's Republic of China but not North Korea, Vietnam, Laos, Cambodia, or Cuba, all covered in the *Encyclopedia of the Third World* (CJ212). Compiled by George T. Kurian with considerable assistance from John J. Karch and using a format familiar to readers of the other two encyclopedias, it offers lengthy articles (ranging from 24 pages for Albania to 128 pages for the Soviet Union) surveying the geography, history, political and economic systems, and educational and cultural affairs in each of those countries, concluding with a very brief chronicle of recent events and a bibliography of English-language sources.

As in any compendium of this kind, particularly one compiled by one or two individuals, the specialist reader will inevitably find some distortions, misstatements of fact, and peculiar or incorrect spellings (the latter particularly noticeable in the section on Poland). It is unfortunate, too, that the narrative historical sections break off with 1945, leaving readers to reconstruct their synthetic view of the events of the past five decades from the various analytic sections and the skeleton chronology at the end. Nonetheless, the book is an impressive achievement, providing ready access to detailed information on a host of questions and a useful format for a comparison of these often very diverse societies. Fairly recent statistical data (much of it for 1988) on such matters as population, work force, tourism, industry, agriculture, trade, health, education, and so forth are provided for the same periods for each country.

To be sure, the revolutionary changes of the last two years have rapidly overtaken and outdated the descriptions provided here. What seemed until only recently to be an unshakable feature of the world scene is melting away before our eyes, making it increasingly difficult to speak of this already very heterogeneous collection of countries as any kind of separate "world." One can hardly fault the authors here, of course. They have clearly made valiant efforts to bring parts of the text up to date, although not always with equal success. In any case, it will certainly be some time before such an encyclopedic compendium can be undertaken again (if, indeed, another work of this kind will ever be possible). For the meantime, however, the volume should serve as a useful takeoff point in making some sense of these societies as they abandon the ideological and institutional conformity that once united them and struggle to evolve new, individual forms of economic and political life.—R.H.S.

Roberts, Nancy L. *American Peace Writers, Editors, and Periodicals: A Dictionary.* Westport, Conn.: Greenwood, 1991. 362p. $65 (ISBN 0-313-26842-8). LC 90-23169.

Peace movements, which are quite heterogeneous phenomena, are here studied from the focal point of their relationships to journalism, communication, and the advocacy press in the nineteenth and twentieth centuries. Although adopting the form of a biographical dictionary, *American Peace Writers* provides a who's who of members of peace movements in the United States, a survey article on the American peace advocacy periodical press, a list of periodicals, a chronology of peace movements, a list of affiliations of the individuals listed to peace organizations, and a selected bibliography. It is indexed by name and topic.

A typical entry for a person includes brief biographical data (dates and places of birth and death, professional activities), peace activities, and a fairly substantial bibliography of works by and about the individual and the location of the archival resources (papers, oral history sources, etc.).

The section of advocacy periodicals lists names of publishers, editors, editorial board members, along with the publication data under each periodical title. An asterisk denotes that the person is included in the dictionary section.

In view of the importance of the media in shaping public opinion and policy, this work is a welcome contribution to peace studies.—J.S.

FOLKLORE AND MYTHOLOGY

Mythologies, Compiled by Yves Bonnefoy: a Restructured Translation of Dictionnaire des Mythologies et des Religions des Sociétés Traditionnelles et du Monde Antique. Prepared under the direction of Wendy Doniger. Trans. Gerald Honigsblum and others. Chicago: Univ. of Chicago Pr., 1991. 2v. $195 (ISBN 0-226-06453-0). LC 90-46982.

As editor Wendy Doniger firmly states in her preface,"This is . . . certainly not an encyclopedia." Although the original *Dictionnaire* (Paris: Flammarion, 1981) was arranged in alphabetical form, it was "a quirky and idiosyncratic set of essays, long and short, by a particular group of mythologists, most of whom are French and all of whom participate in the French school of mythology in its broadest sense" (Pref.). Rather than a dispassionate survey, the French edition offered an uneven and arbitrary treatment of topics in mythology, concentrating, for instance, on Francophone Africa to the neglect of other cultures and omitting Judaism and Islam altogether. At the same time, it provided a "snapshot" of the influential French scholarship engendered by Claude Levi-Strauss and Georges Dumézil, which makes use of terminology and techniques from the disparate fields of semantics, literary criticism, anthropology, theology, linguistics, and sociology in the study of myth. Hoping to "minimize [the work's] weaknesses, emphasize its sometimes hidden strengths, and make it useful to the English-speaking reader in new ways," the French alphabetical arrangement has been reorganized into ten main sections covering Africa; the ancient Near East; Celts, Norse, Slavs, Caucasians, and their neighbors; Greece; Rome; Western civilization in the Christian era; South Asia, Iran, and Buddhism; Southeast Asia; East Asia and Inner Asia; and the Americas and the South Pacific. In addition, an introductory section covers the interpretation of mythology, mythography, and prehistoric religion.

Within each section are approximately fifty signed articles on specific topics, themes, characters, and motifs with copious illustrations. Entries range in length from two sentences (Rhadamanthys) to several thousand words (The Problem of Evil). Coverage is inconsistent: some chapters dwell at length on literary or psychological studies and motifs while others seem more taken up with ethnography or folklore. The organization of the work into geographical chapters makes for fascinating browsing but does require frequent consultation of the general index for discussion of particular themes or phenomena in different cultures. Most articles conclude with bibliographies, but *Mythologies* remains very much a work in translation—the bibliographies cite French translations of texts, rather than English versions. Another small bibliographic complaint is the lack of an author index or general bibliography: since so many of these articles were written by the most influential scholars working today, it would be nice to be able to locate, for instance, all the articles by Pierre Vidal-Naquet or Nicole Loraux.

This handsomely illustrated pair of volumes would be as at home on a coffee table as in the reference collection. Much like Joseph Campbell's monumental *Historical Atlas of World Mythology* (CF3), *Mythologies* may perhaps provide more pleasure to the browsing reader than to the harried reference librarian trying to chase down the genealogy of the minotaur. However, it does offer a wonderful collection of the important French scholarship of the last few decades, and will provide beginning students with an introduction to the current thinking and controversies in the study of mythology and religion.—B.J.

HISTORY

Historical Abstracts on Disk. v.38 (1987)-v.42A, no. 1 (1991)[computer file]; and America History and Life on Disk v.24 (1987) v.28, no. 2 (1991) [computer file]. Santa Barbara, Calif.: ABC-Clio, 1991. 4 3/4-inch computer laser optical disks. Three times a year, each disk cumulative. $2,000 for each disk if a subscriber to the print version also, otherwise $2,750 (different prices if networked).

For many years, the print versions of *Historical Abstracts* (DA19-DA21) and *America History and Life* (DB47) have been mainstays of bibliographic research for historians. The volumes are noted for their broad and comprehensive coverage of English-language major monographs, articles, and dissertations in the historical field, as well as for serious coverage of much major foreign-language literature. Nonetheless, those interested in focusing in quickly on a specific topic rather than browsing through broader subject categories have long been hampered by these publications' somewhat cumbersome and murky system of subject indexing. Given limitations of access and cost, use of the online database version of these indexes has not been a satisfactory alternative, despite the infinitely greater efficiencies of the latter method of searching. Hence, it is with considerable enthusiasm that librarians can greet the long awaited compact disk versions of both these publications, which promise to combine the power of electronic searching with the convenience and flexibility of consulting a reference tool locally rather than online.

The enthusiasm must be tempered, however, by two troubling facts. The first is the reported plan of the publisher, ABC-Clio, to limit the period of coverage on this disk to the last five years of indexing only. The second is the publisher's decision not to make use of any preexisting CD-ROM searching interface, but instead to come up with a customized software package of its own. As a result, end users will be forced to spend time learning (or, even more likely, being taught) yet another set of protocols rather than simply sitting down and beginning to search for the information they want. Moreover, the current version of the software has some slightly irritating features: no provision for searching by descriptor alone on the simpler one-page version of the search screen (it is included on a much more detailed multipage version that is less convenient to use); the need to use adjacency characters between elements in a string, even in the author field; narrow search fields, which can make the composition and editing of complex Boolean searches a cumbersome business; difficulty in comfortably and efficiently inserting terms from the indexes into the search fields; and an awkward print menu that is likely to trap the unwary user into printing an entire list of references rather than just the ones he or she wants.

All such problems aside, it is clear that this is one of the most significant (if not the most significant) additions to the store of electronic reference tools this year. It has been this reviewer's experience that, regardless of the difficulties of the current software, library patrons introduced to this product have embraced it enthusiastically as an alternative to the much more time-consuming consultation of the printed volumes. In time, particularly if the range of coverage were to increase, it is hard to imagine that any serious research library now subscribing to the printed versions of this product could resist obtaining the CD-ROM. Reference librarians can only hope that, if switching to one of the standard interfaces is impossible, at least subsequent updates of the software will address some of the aforementioned problems.—R.H.S.

Oxford Dictionary of Byzantium. Ed.-in-chief, Alexander P. Kazhdan. New York: Oxford Univ. Pr., 1991. 3v. $275 (ISBN 0-19-504652-8). LC 90-23208.

The Byzantine Empire, which endured for at least twelve centuries and extended at its zenith from Gibraltar to Armenia, from the Danube to the Nile, remains a large lacuna in the minds of most people otherwise well-versed in the intricacies of European history. Indeed, even our term *Byzantine* is a misnomer, as the inhabitants of Constantine's realm never thought of themselves as anything other than the legitimate successors to the Roman Empire. The curious student or researcher might find some helpful information about Byzantium in recent reference books such as the *Dictionary of the Middle Ages* (DA164), and several bibliographic compendiums in various languages have been issued throughout this century. However, until now, no comprehensive, up-to-date English-language source existed; this omission left beginning students to confront a bewildering array of Russian, Greek, German, and French monographs on particular topics.

The paucity of reference sources in *any* language—the aborted *Reallexikon der Byzantinistik* (Amsterdam: Hakkart, 1968–76) ceased after the publication of only six fascicles—makes the new *Oxford Dictionary of Byzantium* doubly welcome.

Seven years in the making, this dictionary contains over 5,000 signed entries on the persons, institutions, geography, politics, arts, economics, and religions of the empire from the fourth through the fifteenth centuries. Articles vary in length from a paragraph to several pages, and all include short bibliographies of recommended texts, editions, or translations as well as secondary literature. Greek translations or transliterations are provided for most entries; cross-references to related articles are included in the text. Approximately fifty black and white maps and genealogical tables, as well as photographs and line drawings of art works, manuscripts, architecture, and portraits are scattered throughout the volumes.

Articles are for the most part well-written and concise, though many require a great deal of page-turning to track down all the cross-references to scholarly terminology or obscure persons or places (e.g., chrysobull, proskynesis, automata, etc.). Though many of the entries are devoted to emperors and their courts, church prelates and theology, and all the appurtenances of the public realm, readers will enjoy the many articles on different aspects of the private life and customs of ordinary people, such as the entries on diet, wine, weddings, ink, beasts of burden, and childhood.

However, two defects may hinder the use of this work. The lack of an index forces readers to hunt through the three volumes for related articles on their topic. The second problem is the editorial choice of letter-by-letter, rather than word-by-word alphabetization. This arrangement can cause articles on similar topics to be separated by nonrelated entries. For example, Arta (a town in Northwestern Greece) comes between "Art" and "Art and the West." Unfortunately, many browsers may never find the second, important entry unless they pay close attention to the cross-references in the first article.

Despite this minor difficulty and the more serious lack of an index, the *Oxford Dictionary of Byzantium* constitutes an important new resource and, for most large research collections, is well worth its hefty price.—B.J.

Seewann, Gerhard. *Bestandskatalog der Bibliothek des Südost-Instituts, München*. Munich: R. Oldenbourg, 1990. v.1 (in progress). (Südosteuropa-Bibliographie: Ergänsungsband 1). LC 91-166451.

Contents: Bd.1, Druckschriften 1529–1945. 850p. DM198 (ISBN 3-486-55031-4).

The Südost-Institut in Munich is a state-supported, independent research institute, whose library collects material written in all languages about the history, politics, economics, and culture of Albania, Bulgaria, Yugoslavia, Romania, Czechoslovakia, and Hungary, and the Byzantine, Ottoman, and Hapsburg empires. This volume lists the Library's 80,000 books published from 1529 to 1945. Although intended as a guide to the library's holdings, its detailed table of contents and classified arrangement make it useful to scholars as a subject bibliography. The catalog also includes an alphabetical list, with detailed holdings, of the newspapers and magazines to which the library subscribes, and an alphabetical index of main entries (author, title, or corporate author). Any library supporting advanced research in this area should have this catalog.—M.C.

Stephens, W. B. *Sources for U.S. History: Nineteenth-Century Communities*. Cambridge: Cambridge Univ. Pr., [1991]. 558p. $75 (ISBN 0-521-353157). LC 90-37810.

For anyone familiar with Stephens's earlier work, *Sources for English Local History* (DC327), the news that he has turned his attention to U.S. local history will be most welcome. Preferring to use the term *community history*, Stephens defines his focus as "an identifiable entity . . . occupying a particular territory smaller than a state—like a region, a county, a township or city, or perhaps a distinct part of a city" (Introd.).

The author discusses both the use of primary and secondary sources, published and unpublished: statistical, narrative, bibliographic, cartographic, or pictorial, carried out through topical chapters, e.g., "Education," "Poverty," "Health and Crime," "Manufacturing, Mining, and Business Activity." The religion chapter provides a good example of Stephens's method. First Stephens presents ideas for research, e.g., a history of an individual church or parish, the growth of regional administrative structures, the religious activities of northern churches in the South during Reconstruction, relations between ethnicity and religion, church attitudes toward morality or a controversy, etc. He then discusses the general primary and secondary sources, including denominational and business directories, travelers' accounts, sermons, maps and plans, photographs, general and denominational newspapers and periodicals. Sections then cover denominational records and collections and sources for missionary work. The chapter ends with an examination of the usefulness of government records both federal and state (e.g., census) and county (e.g., probate records, marriage and death records, tax lists).

The index covers topics or themes addressed in the discussions but not to the examples or authors cited. For researchers (not necessarily academic) of nineteenth-century American history this guide will be of immense help.—E.Mc.

NEW EDITIONS, SUPPLEMENTS, ETC.

The Dictionary of Bias-Free Usage: A Guide to Nondiscriminatory Language, edited by Rosalie Maggio (Phoenix, Ariz.: Oryx, 1991. 293p., $25), is a revised edition of *The Nonsexist Word Finder* (Oryx, 1987. 210p.). This new edition has increased the number of words treated from about 3,000 to 5,000 (with 15,000 alternatives), expanded the "Writing Guidelines" portion, dropped the section of readings, and changed the bibliography to a brief paragraph, "For Further Reading," which cites a few of the important, more recently published books.

J. D. Douglas, known to reference librarians as the compiler of *The New Bible Dictionary* (BB174) and the *New International Dictionary of the Christian Church* (BB240), has turned his attention to the *Schaff-Herzog Encyclopedia of Religious Knowledge* (BB63) by editing a new edition of the supplement, *The 20th-Century Encyclopedia of Religious Knowledge* (Grand Rapids, Mich.: Baker Book, 1991. 895p., $39.95). The scope is limited to twentieth-century theology, biblical studies, church history, and comparative religion. It is "more consistently and intentionally evangelical in outlook, in viewpoint and interests . . . [but] less American in orientation" (Pref.). Some entries, especially biographical ones, are repeated, other earlier entries are revised, bibliographies are updated. With new articles on contemporary issues, the work now contains 2,100 articles.

A supplement to *World Authors* (BD111, BD113, and 1975–1980 published in 1985) covering 1980 to 1985 has been compiled by Vineta Colby (New York: Wilson, 1991. 938p., $80), featuring prominent authors in this period from Edward Abbey to Zhang Xianliang, in order "to offer not only a biographical account but also a comprehensive survey of each author's achievement" (Pref.). The volume concludes with a list of the authors by nationality, pointing up the fact that the coverage is strongest for English-language speakers but also recognizing the great effort made to achieve an international sweep.

Revised is *Contemporary Poets*, edited by Tracy Chevalier (5th ed. Chicago: St. James Pr., 1991. 1,179p., $115; 3d ed., 1980 (BD639); 4th ed., 1985) in order to maintain currency. There is now an index of all books listed in the Verse section of each entry and an appendix with notes on the advisers and contributors.

A Dictionary of Literary Terms and Literary Theory edited by J. A. Cuddon (3d ed. [Oxford and Cambridge, Mass.]: Blackwell, [1991]. 1,051p., $44.95; 1st ed. 1977 (BD53); rev. ed., 1979) is greatly expanded with much new material on literary theory, the theater, and forms of popular literature. It is still strong on cross-references, with no indexing.

The Reference Guide to English Literature edited by D. L. Kirkpatrick (2d ed. Chicago: St. James Pr., 1991. 3v. 2,143p., $250); 1st ed: *St. James Reference Guide to English Literature*, (1985. 8v.) looks very much like *Contemporary Poets* (BD639 and above), *Contemporary Dramatists* (BD222), and *Contemporary Literary Critics* (BD398) in that for each author it gives a brief chronology of the author, a complete list of published works with a select list of bibliographies and critical studies, and a signed critical essay. The difference is that this set addresses few living writers. The previous edition was arranged by broad periods, e.g., the beginnings of English literature and the Renaissance, and twentieth-century poetry. The present edition has introductory essays on periods and genres, but the authors are presented in alphabetical order, followed by a special section of discussion of specific novels. The book is indexed by title.

The New Arthurian Encyclopedia, edited by Norris J. Lacy (New York: Garland, 1991. Garland Reference Library of the Humanities 931. 577p., $80), is virtually the same as its predecessor, *The Arthurian Encyclopedia* (1986), but with the addition of 500 entries.

Two hundred authors of German seventeenth-century literature have been thoroughly indexed by Gerhard Dunnhaupt in *Personalbibliographien zu den Drucken des Barock* (Stuttgart: A. Hiersemann, 1990–91. v.1–4 (Abele-Postel); to be in 6v., 660DM per volume). For each author, Dunnhaupt gives a biographical sketch and a complete bibliography of all original and translated works published up to the mid-eighteenth century. This edition is much expanded from the original *Bibliographisches Handbuch der Barockliteratur* (BD810). It is an amazing work: more than 700 libraries from all over Europe and North America have been surveyed; there is a listing of 1,200 bibliographies of bibliography.

A very welcome addition to the *International Encyclopedia of the Social Sciences* (CA51) is v.19, *Social Science Quotations*, compiled by David L. Sills and Robert K.Merton (New York: Macmillan, 1991. 437p., $90). Besides providing a vast number of quotations to "supplement the biography articles" and "to highlight some social science idea, theme or general finding" (Pref.), the volume is a very handy ready reference tool in its own right. Most admirable is the exact bibliographical reference to the source of the quote with page or paragraph. It is delightful to see that Professor Merton has included relevant quotations for "Standing on the shoulders of giants" with a neat twist in the most current expression of that term. The arrangement is alphabetical by author with a good subject index.

In 1991, *PAIS Bulletin* (CA35) and *PAIS Foreign Language Index* (CA33) merged to form *PAIS International in Print* (New York: Public Affairs Information Service. $495). The coverage is the same: the same journals, the same types of monographs, and government publications. The editors state that about 80 percent of the new index will be English-language material, with French, German, Italian, Portuguese, and Spanish making up the rest. The foreign language citations always have a brief abstract (as do many of the English-language ones as well). The editor also points out that there are many more geographic headings in the merged index.

Frances Goins Wilhoit's *Mass Media Bibliography: an Annotated Guide to Books and Journals for Research and Reference* (Urbana, Ill.: Univ. of Illinois Pr.; Ithaca, N.Y.: Cornell Univ. Pr., 1990. 344p., $49.95) is a revised and expanded edition of Eleanor Blum's *Basic Books in the Mass Media* (CH495). By dropping "basic" from the title as too restricting, Wilhoit has broadened the coverage of this third edition to 1947 entries with the majority of new titles published from 1980 to 1987.

Continuing the *Great Historians* series is *Great Historians of the Modern Age: An International Dictionary*, edited by Lucian Boia (Westport, Conn.: Greenwood, 1991. 841p. $95) for the nineteenth and twentieth centuries. Perhaps because the editor is Romanian, the coverage seems to be much more international—9 historians for Africa (including Louis Leakey), 13 sketches for Arab historians, 12 for Austria, 29 English sketches, 20 Romanian sketches, etc. The table of contents does not list the biographies; it only lists the regional sections, which is a nuisance. The book is indexed by name and subject.

The second edition of Jack Sweetman's, *American Naval History: An Illustrated Chronology of the U.S. Navy and Marine Corps 1775-Present* (Annapolis, Md.: Naval Institute Pr., 1991, 376p. $36.95) has added coverage from April 28, 1984 to March 8–10, 1991, and an updated bibliography.

The *Cambridge History of Latin America* (DB281) is devoting volumes VI-IX to Latin America since 1930. Volume VIII (Cambridge: Cambridge Univ. Pr., 1991. 919p. $89.50) addresses itself to the history of the nine republics: Argentina, Uruguay, Paraguay, Chile, Peru, Bolivia, Colombia, Ecuador, and Venezuela. Coverage for many of these countries comes up to the late 1980s and 1990.

A much expanded and updated version of G.S.P. Freeman Grenville's *Modern Atlas of African History* (London: Collings, 1976, 63p.) now covers from prehistoric times to 1990. The *New Atlas of African History* (London: Macmillan; New York: Simon & Schuster, 1991. 144p., $65) presents 103 relief maps and accompanying text. It is indexed by name and subject.

Research Notes

The Economics of Economics Journals: A Statistical Analysis of Pricing Practices by Publishers

H. Craig Petersen

This study uses multiple regression analysis to investigate price determinants of the top-ranked economics journals. Holding other factors constant, the study found that the prices charged to libraries in the United States are significantly higher for journals from for-profit publishers and for those originating in Europe. The estimated price differential for European journals is too large to be attributed entirely to the extra cost of shipping the periodicals to the United States. Another finding was that there is a positive and significant correlation between a journal's impact (measured by frequency of citations) and its price. The results suggest that journal prices are not always cost based. One implication is that, as the main buyers in the market, libraries should not passively acquiesce to all price increases. Rather, working through their associations, libraries should require publishers of journals whose prices appear to be excessive to justify their pricing policies.

Wide variation occurs in the prices of economics journals. Often, these differences cannot be explained by publishing costs alone. For example, the 1990 subscription price to libraries in the United States for the *Journal of Econometrics* was $575, while the rate for the *Journal of Economic Issues* was only $40. But the two journals have about the same number of pages per year and are generally similar in appearance. Clearly, factors other than cost must determine the relative prices of such publications.

This paper reports the results of a statistical analysis of pricing practices by the publishers of economics journals. It is similar to a previous study by the author, but incorporates more sophisticated methodology, a better-defined sample of journals, and additional explanatory variables.[1] The objective of the analysis is to determine the noncost factors that affect prices of the leading economics journals. Specific hypotheses to be tested are that (1) prices of periodicals from for-profit publishers are higher than those of other publishers, (2) European journals have higher prices than those of publications originating in the United States, and (3) prices of more prestigious journals are higher.

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A *Journal of Economic Literature* article by S. J. Liebowitz and J. P. Palmer evaluated the relative impact of economics journals by using the number of times articles from a particular journal were cited in other journals. These counts were adjusted by the size of each publication and were used to formulate a ranking of economics journals.[2] The results reported here are based on that ranking. Starting with the top 100 journals as determined by Liebowitz and Palmer, nine journals were deleted (e.g., *Yale Law Review*) from this study because they originated in another discipline. Another 10 had to be eliminated because of missing data. The remaining 81 journals from the Liebowitz and Palmer ranking constitute the sample used here to investigate the determinants of journal prices.

The price data are 1990 one-year subscription prices charged to libraries in the United States.[3] Table 1 shows relationships between mean prices and journal characteristics. Note that prices are higher for journals from the for-profit publishers and those originating in Great Britain and Europe. Some plausible reasons exist for these differentials. The commercial publishers can be assumed to be maximizing profit, while institutional and societal publishers tend to have other goals, such as disseminating knowledge. Thus, it is not surprising that commercial suppliers, facing similar costs, would charge higher prices. Higher prices in the United States for journals published abroad could reflect several factors. The most likely is additional distribution costs of shipping journals to the United States.

Another explanation for the observed price differentials is that the demand for some journals is more inelastic because those periodicals are considered to be more useful or more prestigious. If such journals are not randomly distributed by nation of origin or type of publisher, this factor may explain the price differences shown in table 1.

Note also the circulation data in table 1. Four journals have less than 1,000 subscribers. At the other extreme is the *American Economic Review* with a circulation of 26,000. The table suggests that prices are inversely related to journal circulation. This is consistent with the existence of economies of scale in publishing and distribution.

TABLE 1
PRICE CHARACTERSTICS OF ECONOMICS JOURNALS

Characteristic	No.	Mean One-Year 1990 Library Price
Total sample	81	$107.00
Type of publisher		
Commercial	25	217.40
Academic society or other Nonprofit institution	56	57.71
Country of origin		
United States or Canada	50	62.38
Great Britain	16	113.94
Europe	10	343.80
Other countries	5	57.40
Circulation (number of copies)		
1,000 or less	4	203.50
1,001–2,000	30	148.63
2,001–5,000	35	73.63
More than 5,000	12	68.08

$$PRICE = a_0 + a_1FREQ + a_2LENGTH + a_3CIRC + a_4ADV + a_5IMPACT + a_6PROFIT + a_7GB + a_8EUR + a_9\ OTHER + u$$

with variables defined as follows:

PRICE = 1990 one-year subscription price to libraries.
FREQ = Number of issues per year.
LENGTH = Number of pages per issue.
CIRC = Circulation. Number of copies per issue.
ADV = Advertising found in the journal. Yes=1, No=0.
IMPACT = Impact or usefulness of journal. Citations per character as calculated by Liebowitz and Palmer.
PROFIT = Journal published by a for-profit firm. Yes=1, No=0.
GB = Journal published in Great Britain. Yes=1, No=0.
EUR = Journal published in Europe. Yes=1, No=0.
OTHER = Journal not published in United States, Canada, Great Britain, or Europe. Yes=1, No=0.
u= Randomly distributed error term.

FIGURE 1

A general problem with the data in table 1 is that they mask interactions between the factors that affect journal prices. For example, although the commercial publications have higher prices, the data do not prove differential pricing by publisher type. It could be that the journals from for-profit publishers are longer, more expensive to produce, or are perceived as more prestigious than those from societies and other nonprofit institutions.

Sorting out the effects of individual determinants of journal prices requires statistical analysis. Of the many available techniques, the investigators chose multiple regression because, in addition to separating the effects of different variables, it also provides quantitative estimates of the magnitudes of those effects. The regression model used is described in the next section.

MODEL

The factors that affect journal pricing can be divided into four categories—cost, systematic noncost, demand, and random. Among the most important of the cost factors are number of pages per issue, number of issues per year, circulation, whether advertising is accepted (advertising generates revenue that can offset production costs), and distribution costs. Possible systematic noncost factors already noted are type of publisher and nation of origin. Demand-related factors affecting journal prices include the prestige or perceived value of the publication. Any remaining variation in prices is assumed to reflect random influences.

This study estimated that journals published in Europe cost about $168 more than those originating from the United States or Canada.

Based on the previous discussion, the following equation is suggested to explain variations in the price charged to libraries for economics journals. This model should be viewed as a reduced form equation THAT incorporates the net effects of cost, systematic noncost, and demand-related influences on prices.

The coefficient of PROFIT estimates price differentials for journals provided by commercial publishers relative to those from societies and other nonprofit institutions. The coefficients of GB, EUR, and OTHER estimate prices of journals published in Great Britain, Europe, and other countries in comparison to prices for journals from the United States and Canada.

$$
\begin{aligned}
\text{PRICE} = -19.6644 &+ \underset{(3.92)^{***}}{17.7148}\ \text{FREQ} + \underset{(0.89)}{0.1154}\ \text{LENGTH} - \underset{(-2.35)^{**}}{0.0051}\ \text{CIRC} \\
&- \underset{(-0.71)}{11.4022}\ \text{ADV} + \underset{(2.63)^{***}}{54.3712}\ \text{PROFIT} + \underset{(1.68)^{*}}{0.6562}\ \text{IMPACT} \\
&+ \underset{(1.19)}{23.5423}\ \text{GB} + \underset{(5.26)^{***}}{167.6590}\ \text{EUR} + \underset{(0.17)}{5.3231}\ \text{OTHER}
\end{aligned}
$$

R = 0.739
n = 81

* Significant at 0.05: one-tail test.
** Significant at 0.05.
*** Significant at 0.01.

FIGURE 2

The coefficient of CIRC captures scale economy effects. An inverse relationship is predicted. That is, journals with larger circulations are likely to have lower production costs and, consequently, lower prices.[4]

With respect to the impact variable, journals perceived to be more useful should be able to charge higher prices. The number of *Social Science Citation Index* listings calculated by Liebowitz and Palmer is used as the index of impact or usefulness. Hence, it is expected that the estimated coefficient of IMPACT would be a positive number.[5]

REGRESSION RESULTS

Coefficients of the regression equation for library prices were estimated using ordinary least squares and data from the 81 journals. Results are provided below with *t*-statistics in parentheses. The statistically significant coefficients are designated with asterisks. A one-tail test was used in one case because the sign of the coefficient could be predicted from economic theory. Approximately 74 percent of total variation in journal prices is explained by the independent variables of the model.

The coefficients of the cost variables are consistent with prior expectations. Number of issues each year is significantly and positively related to price. Prices increase as the number of pages per issue increase. Prices and the presence of advertising are inversely correlated. However, the coefficients of LENGTH and ADV (advertising) are not statistically significant.

Note that the regression analysis indicates a statistically significant inverse relationship between price and journal circulation. This negative coefficient reflects economies of scale in journal publishing. The size of the coefficient implies that for each 1,000 increase in circulation, the price declines by approximately $5.

The demand-related effect of journal usefulness on prices was estimated by the coefficient of IMPACT. The coefficient was positive (as predicted) and statistically significant based on a one-tail test. That is, more frequently cited journals were found to have higher prices.

Journals from forprofit publishers are significantly more expensive.

With respect to systematic noncost factors, those journals published in Great Britain, Europe, and other (non-U.S.) nations were determined to command higher prices than those originating in the United States and Canada. However, the coefficient is only statistically significant for European journals. For those observations, the differential is quite large. Holding other factors constant, this study estimated that journals published in Europe cost about $168 more than those originating from the United States or Canada.

Some differential would be expected because of distribution costs for European journals shipped to the United States. The real question is whether the differentials are greater than could be attributed to these costs. The estimated coefficient for Great Britain provides a frame of reference. The mean price of British journals is about $24 more than that of U.S. journals. Assume that this value approximates the additional costs of shipping journals across the Atlantic Ocean. Note that the price premium charged for European journals is about seven times that amount. Some of the additional differential could reflect higher production costs in Europe, but it is unlikely that costs would be seven times greater than those in Great Britain. Apparently, European publishers have a different pricing policy than those of other journal suppliers.

For type of publisher, the coefficient of PROFIT is positive and statistically significant. With other factors held constant, journals from the for-profit publishers are estimated to cost about $53 more than those from academic societies and other nonprofit institutions. This conclusion is consistent with prior expectations.

CONCLUSIONS AND IMPLICATIONS

The results of this study provide some preliminary findings on pricing of economics journals. Noncost factors can have a significant impact on prices. In particular, statistically significant price differentials exist for journals from for-profit publishers and for those originating in Europe. The European premium is too large to be attributed solely to additional costs of production and distribution. More frequently cited economics journals command higher prices.

Rapidly increasing journal prices and budgetary restrictions have caused libraries to severely limit purchases of new journals and to cancel subscriptions for journals already in the library's collection. As this practice continues, it will reduce access of faculty and graduate students to new ideas in their fields. Over time, the result will be diminished research and teaching productivity.

The finding of this research, that noncost factors are significant determinants of journal prices, suggests that rapid price increases are not inevitable, and that the groups affected should not passively acquiesce. The question is: Which groups have the incentives and influence to facilitate change? One possibility is the scholars who use journals for their research and submit articles for publication. If prices of certain journals become too high, scholars could use their professional associations to establish other, less expensive publications. The problem is that scholars have little incentive to do so. They have access to library subscriptions of journals at no cost and can usually purchase individual subscriptions at rates significantly less than the library price. Cancellation of library subscriptions may not only deprive the scholar and the graduate student of access to library subscriptions but also to personal subscriptions which are sometimes contingent on an institutional subscription.

Also, scholars are evaluated not only on how frequently they publish but also on the prestige of the journals in which their work appears. Articles in new, little-known journals do not contribute as much to professional advancement as do articles in the top journals. Consequently, it is unlikely that scholars will abandon such journals for less expensive, but less prestigious substitutes. Societies can establish new journals and invest them with excellent editors and boards, but the process is a lengthy one.

Another group that could influence journal pricing is library associations. Because their budgets are affected, libraries have a strong incentive to oppose price increases. Because they represent the largest purchasers in the market, these associations may be able to exert their economic influence in dealing with journal suppliers. At the very least, publishers whose prices are significantly higher than charges for comparable publications should be asked to justify their pricing practices by providing detailed information on costs.

REFERENCES AND NOTES

1. See H. C. Petersen, "Variations in Journal Prices: A Statistical Analysis," *The Serials Librarian* 17:1–10 (1989).
2. See S. J. Liebowitz and J. P. Palmer, "Assessing the Relative Impacts of Economics

Journals," *The Journal of Economic Literature* 22:77–88 (Mar. 1984). Data used in this analysis are taken from table 2, col. 2., p.85. The rankings are based on citations to articles in a particular journal by articles from other journals. These data were obtained from E. Garfield, ed., *Social Science Citation Index* (Philadelphia: Institute for Scientific Information). Data were adjusted for journal length by dividing the total number of citations by number of characters in the journal.

3. Library prices as reported in Faxon Inc., *Faxon Librarian's Guide to Serials:1990* (Westwood, Mass.: Faxon, 1990).
4. The inclusion of circulation data is a unique contribution of this study. This information is available for most U.S. journals, but can be very difficult to obtain for foreign journals, especially those from commercial publishers.
5. The citation data were normalized by assigning the journal with the most citations per character (the *Journal of Political Economy*) a value of 100. For all other publications, the data represent the percent of citations per character compared to the most frequently cited journal.

Book Reviews

Newsletter on Serial Pricing Issues. Ed. by Marcia Tuttle. Electronic mail address to subscribe, submit, or request back issues: TUTTLE@UNC.bitnet. U.S. mail address: Serials Department, Davis Library, University of North Carolina, Chapel Hill, NC 27599. No.1— . February 25, 1989– . Subscription price: free. *Note*: Access cost may be involved at the subscriber's end depending on type of network access and charging mechanisms for connect time (ISSN: 1046-3410).

My enthusiasm for early electronic networked serials does not stem from their meeting the same standards as print-on-paper publications, standards that have evolved over 500 years. (Standards have yet to evolve for e-publications.) Nor is the proper question, would libraries acquire an e-journal if they had to pay in hard currency? (We might not for a number of reasons, such as not knowing quite what to do with such publications.) One has to be excited by electronic serials because they are small steps at tapping the potential of an awesome medium. One has to be thankful for them and their editors, for they have, almost without our realizing it, inveigled us into the basic techniques of navigating e-world, and we have had fun learning how.

The *Newsletter on Serial Pricing Issues (NSPI)* falls somewhere in the middle-range of formality of the electronic serials currently distributed on the "Net." That is, it is not a discussion list, where postings are received from list members and redistributed; it is not a journal with an editor who receives, edits, possibly submits for peer review, and distributes long scholarly or discursive articles. The *NSPI* has a theme: serial prices; it has a mission: to deliver late-breaking news and opinions quickly to subscribers; it has a philosophy: to be impartial.

This philosophy of impartiality means that when the editor sees or is offered material that is in scope, responsibly written, and interesting to subscribers, that material (letters, news items, extracts from published materials) is included. Originator and philosophical stances do not determine inclusion.

The *Newsletter* originally began under sponsorship of the ALA/RTSD (later ALCTS) Publisher/Vendor-Library Relations Committee, which created a subcommittee on serials pricing issues, one of whose mandates was to act as a clearinghouse, gathering and disseminating pricing information. Marcia Tuttle, subcommittee chair, envisioned the electronic *NSPI*, and the other subcommittee members became the first editorial board. After the subcommittee was disbanded two years later (May 1991), Tuttle continued the *Newsletter* as her own, and established a new editorial board. All along, the *Newsletter* has borne the stamp of the editor. The board's influence has been largely transparent.

Originally the *Newsletter* was slated to appear first electronically, with a paper counterpart following every two months. By October of 1989, less than a year after start-up, ALA recognized the need for some cost recovery and announced a fee for retrospective paper copies, effective January 1990. In issue #15, January 27, 1990, an editorial announced that paper would no longer be produced. This was a perfectly sensible decision, given the commitment to publish quickly and inexpensively as the highest priority. Such a sequence may eventually prove to be the model for a number of journals that begin in parallel formats and quickly find the costs of dual (paper and electronic) output too high to sustain and drop the paper version or charge for it. In electronic publishing it is, after all, possible to move the paper production efforts and costs onto the subscribers rather than onto the editors and publishers.

At this writing, Tuttle has produced fifty-one *NSPI* issues in under three years, or 1 2/3 issues per month. Their appearance has been regularly irregular. Presumably when there is enough material or there is late-breaking news, an issue is keyed and distributed to those on the subscription list. This is the model that all electronic lists and conferences, as well as some e-journals, follow. While the *Newsletter* has not changed a great deal since its start-up, technical issues have been resolved; the software has improved, and editor and subscribers have become much more e-proficient. No longer is it necessary to run pieces in the *Newsletter* describing how to download or access it—a critical mass of academic readers is fluent in e-reading.

With issue #2, a table of contents appeared, along with a column, "From the Editor." The column usually informs readers about some characteristic of *NSPI* rather than stating an opinion or point of view on issues. Editorial neutrality presumably encourages diverse types of contributors (such as publishers). Also with issue #5, Chuck Hamaker of LSU began writing the column, "Hamaker's Haymakers," which has been the most consistent feature of the *Newsletter* in providing references to useful reading matter, in interpreting events, and in speaking for the intelligent, conscientious consumer. Hamaker's voice is sometimes strident; often highly opinionated; frequently controversial; and always articulate, provocative, and service-oriented. The column provides a welcome counterpoint to the noncommittal editorial tone.

With issue #11, the *Newsletter* officially received an ISSN, making it a "grown-up" effort. With issue #34, October 1991, an official letters-to-the-editor column, "From the Mailbox," appeared. In n.s. #13, November 1991, a formal linkage between the *Newsletter* and the bulletin board SERIALST was announced, with potentially more spillover in topics, more room for discussion of *NSPI* news items (a useful service to be sure), and SERIALST's becoming "moderated." While any one of these changes is not striking of itself, collectively they illustrate growing sophistication and responsiveness to the technoiogy and wishes of the readership.

The *Newsletter* is quickly produced, avidly read, widely distributed, and full of information on the latest round of price increases from the biggest publishers, projections from subscription agents, reports from significant conferences and workshops, letters written by serials librarians protesting egregious publisher practices, responses from publishers, and announcements of good sessions at library meetings. It is easy to subscribe to, a good read, a quick read, worth the small amount of disk space it takes to save it, and worth reviewing every few months just to remember the details.

The *Newsletter* is as good as it can be given current constraints. It could be improved in some ways, but most of them would take financial commitment in the form of systematically pursuing contributions, increasing the number of contributions, and doing a great deal of editing and editorial work, some research, and some more writing. A little less editorial neutrality would enliven the editor's column. I do not know precisely what *NSPI*'s distribution method is, but it would be useful to have a widely accessible archive file to access via file transfer protocol and to search via standard software. At the moment, one can receive back issues on application to the editor, or if one has been clever and prescient, one has saved all the files electronically on one's computer hard disk, or even on diskettes. Readers like me have been foolish and printed the copies, leaving them lying around like so many conventional paper newsletters, and have lost half the benefit of subscribing to electronic journals in the first place, the benefit of "intelligent" documents.

In addition to distributing a great deal of information and helping to hook librarians onto e-mail, *NSPI* has been a pioneer in the new genre of electronic serials. By now, as directories of e-serials quickly show, librarians have more electronic communication forums than any other profession. The lesson to be learned is that electronic serials, even when physically unprepossessing and produced on shoestring budgets, can be highly visible and powerful.

Almost anyone with an idea, commitment, and spare time, at an institution with network connections and a half-friendly computer center, can start an e-list or newsletter or even a journal, and possibly should. The networks so far are subsidized. It is an excellent time to experiment, to find out what the community needs and wants, to learn what the community supports over time and in what form. Eventually, all these publications will be more sophisticated, more commonplace, less of a novelty. While they will undoubtedly be "better," it will be hard to match the early days' excitement we still feel as we log on to our e-mail and LISTSERV, or the Mailer Daemon bring us the next issue of our current favorites, of which *NSPI* is most certainly one.—*Ann Okerson, Association of Research Libraries, Washington, D.C.*

DePew, John N. *A Library, Media and Preservation Handbook.* Santa Barbara, Calif.: ABC-Clio, 1991. 441 p. (ISBN 0-87436-543-0). LC 91-16501.

The national concern for preserving the intellectual content of great research collections impinges increasingly on the jobs, time, and attention of librarians who are not preservation specialists. For these professionals, as well as for those in smaller institutions, this is a useful and interesting book.

It is generally successful in terms of its stated aims of bringing together a portion of the vast literature of the past two decades on the conservation and preservation of library materials and of making it available to those who have little knowledge of preservation. It is, then, designed as an introduction "to the basic environmental controls, materials, processes and techniques . . . required to house and preserve library materials."

The organization and range of topics treated make it clear that DePew understands preservation in the broadest possible sense, that preventive measures from climate control to disaster preparedness are as important as salvage activities, and that nonprint media merit the same consideration as paper. The handbook is divided into nine sections covering paper and papermaking; the environment; care and handling of library materials; binding and in-house repair; acid paper and brittle books; photographic, audio, and magnetic media; surveys of buildings and collections; disaster preparedness and recovery; and preservation services, suppliers, and educational opportunities. Ten appendices supply further details, specifications, sample forms and surveys, and techniques. Because the language of preservation is complex and technical, a short glossary is provided, and a more complete glossary is planned as a companion volume. The reference bibliography at the end of each section is a useful tool.

The handbook falls short, however, of being a definitive, all-purpose summary of the state of preservation knowledge. For example, because of limitations on space, DePew deliberately excludes discussion of the administration and organization of preservation activities, referring readers to the Association of Research Libraries' *Preservation Organization and Staffing*, SPEC Kit 160 (Washington, D.C., 1990) and works by noted librarians in the field.

In addition, other omissions and a troubling lack of balance among the issues considered and the level of detail in their treatment detract from the book's value. The author's criteria for treating certain topics at length, while only summarizing others, are not articulated. The book begins, for instance, with a very, perhaps unnecessarily, detailed section (forty pages) on paper and papermaking. Highly interesting for the nonspecialist, it leads one to expect a similar level of attention to the treatment of paper. Several aspects of this treatment are discussed, with more attention given to deacidification (fifteen pages), a technology neither fully evolved nor widely used, at least on a large scale, than to preservation microfilming (eleven pages), photocopying (three pages), and digital techniques (two pages).

In the case of microfilming, this brevity seems problematic for a major preservation tool that is widely used in research libraries. The section on preservation microfilming concentrates on the selection of materials suitable for filming, bibliographic control, and the place of microfilm in the array of preservation options. These considerations are drawn from Nancy Gwinn's *Preservation Microfilming: A Guide for Librarians and Archivists* (1987) and various RLG publications. The section on types of film is very brief, and given the level of technical detail elsewhere, one would expect a fuller discussion about the nature of silver halide, diazo, and vesicular film, and the reasons why the latter two are unsuitable for archival film copies. Nor is the glossary helpful here in noting the expected longevity of these types of film, and nowhere does the caveat appear that the different sorts of film should never be stored together.

A more serious shortcoming is the author's failure to convey the urgency of the brittle book problem. Likewise, he ignores the efforts of such entities as the Commission on Preservation and Access and the Council on Library Resources to craft a national agenda for preserving the intellectual content of an estimated twelve million unique titles in the nation's research collections. The Commission is mentioned, but nowhere are its activities summarized. DePew mentions the Library of Congress's goal of deacidifying one million books annually over twenty years but not the National Endowment for the Humanities's Brittle Book Program, a twenty-year plan projecting the preservation microfilming of three million brittle books and serials.

There is no discussion of the resulting large-scale, federally funded preservation microfilming projects that are increasingly a feature of research libraries' preservation activities. A look at the range of individual projects and efforts by various consortia with their various administrative possibilities might have provided a useful backdrop to De Pew's detailed discussion of numerous preservation techniques. As it develops, the field of preservation is moving beyond a concern for techniques alone to a conscious focus on strategy, and this shift should receive some attention in a handbook that claims to survey the literature.

The omission of this aspect of the national perspective is mirrored in a series of omissions in detail. The list of preservation services neglects some major funding agencies like the National Library of Medicine, and prominent microfilmers like Research Publications and Micrographic Systems of Connecticut, both of which do contract work for major preservation projects. In spite of detailed treatment of the deacidification process, the book does not include Akzo Chemicals, the firm that holds the patent on the DEZ process favored by the Library of Congress.

In sum, the handbook is a highly detailed discussion of certain preservation techniques without serious consideration of the institutional and national context in which those techniques are deployed. This flaw makes this work, while generally informative, less than a fully satisfying overview for college and research librarians.—Susanne F. Roberts, Yale University, New Haven, Connecticut.

Desktop Publishing in the University. Ed. by Joan N. Burstyn. Syracuse, N.Y.: Syracuse Univ. Pr., 1991. 137p. paper, $12.95 (ISBN 0-8156-8116-X). LC 91-8759.

Two and a half years ago, Syracuse University and the Association of University Presses sponsored a conference on "The Impact of Desktop Publishing on University Life." At the time, this was a topic fraught with exciting possibilities and hopes, but also questions, doubts, and even fears. The same atmosphere of uncertainty surrounds the topic today. Only the terminology has changed: the almost quaint-sounding phrase *desktop publishing* has been replaced by terms like *scholarly communication* and *electronic publishing*. Several of the articles in this slender volume are based on papers presented at that 1989 conference. They serve as evidence of the inexorable race of technological change, and of the inability of social, ethical, and economic systems to keep pace.

Some questions have been answered since this conference was held, and research has refined our understanding of others. Perhaps it is no longer possible to deal with the whole spectrum of issues in electronic publishing in the sweeping fashion attempted in this volume. But for that very reason, librarians who are new to the topic may appreciate this modest overview. The articles are brief and informal, bearing unmistakable traces of their oral beginnings.

The articles dealing with desktop publishing in the narrow sense are the most straightforward and optimistic in the collection. In "Who Is in Control?" Robert L. Oakman describes the essential role of the computer in producing scholarly editions of texts. David May's "The Sorcerer's Apprentice: A Publication Manager's View" is a rather resigned admission of the speed and flexibility to be gained by the decentralization of campus publications, despite loss of unity and control. Charles L. Creesy of Princeton University Press provides a case study of computerization within a publishing house in "Cutting Costs."

When it comes to the wider implications of electronic communication among scholars, however, the outlook is less rosy. Deborah S. Johnson ("Issues of Access and Equity") warns that the very "malleability" of computers can violate the integrity of the text, and that technology may exacerbate inequalities in the distribution of resources. Czeslaw Jan Grycz ("On the Proper Role of Desktop Publishing in the Environment of Scholarly Publishing") deplores both the decline in quality and the loss of bibliographic control that result from self-publishing. Robert M. Hayes ("Who Should Be in Control?") points out that publishing involves more than the mere printing of texts. It also entails the solicitation of manuscripts, quality control, and distribution—controls that are missing in desktop publishing.

Weighing in on the opposite side are those authors who welcome the changes made possible by technology, even while admitting that the "rules that govern [this] discourse have yet to be decided." Joan W. Burstyn, the book's editor, points out that barriers are breaking down between teaching and research, text and commentary, the published and the unpublished. "We may be passing from the age of individually written works into an age of collaborative creation," she remarks. In an interesting speculative piece, "Desktop Publishing: Its Impact on the Academic Community," Robert J. Silverman envisions the electronic publishing process of the future, with all its implications for peer review and tenure. For example, he foresees a process of post-publication review in the form of commentaries on an electronic publication.

Positive or negative, conservative or revolutionary, all the authors in this book sound the same themes and identify the same areas of conflict and compromise. Whether one calls it a breaking down of structures or a breaking down of barriers, no one denies that disintegration and decentralization are taking place. Have new unifying structures emerged? Does quality necessarily suffer when traditional forms of control are abandoned? Do small institutions, researchers, and disciplines have more to gain or to lose from these changes? Will the linking of word and image brought about by the computer lead to new forms of learning and understanding? Or will this merging of specialized functions detract from both quality and efficiency? Finally, how will librarians guarantee bibliographic and physical access to the mass of material generated at the desktop? Librarians, after all, are only interested observers of the scholarly publishing scene; whereas the organization and preservation of knowledge are their responsibility.—*Jean Alexander, Northwestern University, Evanston, Illinois.*

The Whole Library Handbook: Current Data, Professional Advice, and Curiosa about Libraries and Library Services. Comp. by George M. Eberhart. Chicago: American Library Association, 1991. vi, 490p. paper, $25 (ALA members $22.50) (ISBN 0-8389-0573-0). LC 91-17311.

At first glance this book would seem to be the answer to reference librarians' prayers for a single-volume compendium of timely facts, directory information, and statistics relating to libraries and librarianship in general. It is organized into chapters dealing with libraries as institutions, librarians, librarianship, library materials, library operations, special groups of library users, public relations, technology, current issues in the profession, and library trivia. It makes a valuable contribution by bringing together data on library size, expenditures, growth, and other quantitative categories from a variety of standard sources such as the ARL and ACRL statistics. Its many lists of agency names and addresses for services and institutions, ranging from national and regional archives offices to library placement services, are particularly helpful.

Upon closer examination, however, some questions arise regarding the book's ultimate usefulness. Its division into chapters fails to mask a certain quality of haphazardness in the selection of material for inclusion, which gives it the character of an almanac rather than a true handbook. The profusion of facts, figures, opinions, suggestions, sample policies, and trivial lore is indeed impressive if one reads the volume from cover to cover, but its index of only six pages does not allow the precision of entry which is commonly desirable in works of such scope. There is a very practical article by Anthony Amodeo entitled "How to Move or Shift Books," for example, but no entry in the index for either "moving" or "shifting." Similarly, those interested in using Macintosh computers for public use will find an excellent fillip by Patrick R. Dewey on that subject—but no mention of either Macintoshes or personal computers (or microcomputers) in the index.

It is difficult to determine how this book will be used, to what extent, and by whom. It will surely take its place next to the *Bowker Annual* and the *American Library Directory* on the reference shelves of medium-sized to large libraries of all kinds, and it will just as certainly find its way into the hands of students, scholars, or general users anxious to find the winner of the 1956 Caldecott Medal or the significance of the tenth digit in the ISBN. It may not, despite the ambitious hopes of its editors, become the *vade mecum* of "librarians, library students, support personnel, friends, and trustees," but there is nonetheless a high likelihood of steady and perhaps even heavy use in academic libraries. Its slick cardboard cover and ungathered adhesive binding, though, do not augur well for sustained use; moreover, its not insubstantial price makes duplicate copies problematic. If successful, the publication will presumably undergo frequent updating, and indeed the compiler, in the preface, wisely asks for readers' suggestions for improvements and additions to future editions.

One final remark, at the risk of appearing mean-spirited: a large chapter of the book, as well as substantial inserts into other chapters, attempt to inject a note of levity into the proceedings by presenting presumably humorous anecdotes about librarians, or reprinting whimsical lists of "worst serials title changes," and the like—all no doubt in the interest of "feeling good about the profession." Just as some people don't like mimes or light bulb jokes, so too others may find the compiler's mirthfulness distracting and perhaps even rather tedious. Nevertheless, the Whole Library Handbook has many positive qualities to recommend it, and even for those whose tastes in humor do not here find resonance, it will prove a useful and enjoyable book.—*James H. Spohrer, University of California, Berkeley.*